COAL AGE

Volume 13 NEW YORK, JUNE 22, 1918 Number 25

People Worth While

By FLOYD W. PARSONS

MONDAY evening in Washington I had dinner with a real American—an editor and writer of national repute. He had given up an enviable position affording him comfort, safety and family associations to serve his country.

This man is no longer young. He has a wife he loves and a boy in his teens. Yet in our present crisis he could not remain at home. Few men worked harder than he did, but for months he had worried because he was only helping indirectly.

Within him there was a conflict with conscience, and the mental struggle made him a shadow of his former self. Day after day he pictured the future, and in his vision he saw himself an embittered old man who had failed his country in its hour of need.

This was too much. He went to Washington, got into a uniform, and will soon be "over there." Once again he is happy, for he knows now that the wife and boy who understand will be proud some day when "dad" comes back.

In comparison with such nobility how mean are the profiteers and how despicable the slackers, old and young. Sacrifice for material gain is not sacrifice at all. When this war ends, America will have new standards for the determination of high breeding. An inability to pick the right fork at a society dinner will no longer be the sole measure of a citizen's character. The true patriots will be those who have found a satisfactory reward in the self-consciousness of duty well performed.

Through what process of reasoning can anyone arrive at the conclusion that this war is only a fight of the men and women who have gone to France? Every drop of blood shed by American soldiers on the battle front calls for a thousand drops of perspiration on the brows of American workmen toiling in our mills and mines.

Let us label as traitor every man today who can work and doesn't. Let us brand as disloyal every company and every corporation official who now attempts to exploit workmen under the guise of patriotism and the Nation's need. Let us avoid association with all men and women who are false to our Government and to freedom's cause.

The heat of midsummer is now upon us, and the miner does not live who would not rather roam the woods, or fish, or swim, or lounge in the shade than dig coal in the dark recesses of Mother Earth these wonderful days. But the boys in France have no choice. A bullet will pierce their heart as speedily when the thermometer registers 90 as when the snow covers the ground.

We, likewise, have no choice. Every man must work every day until there is enough coal to make all the guns, shells and ships necessary to destroy German autocracy and forever end the rule of men who laugh at treaties, and who through rape and murder have added a new meaning to the word "frightfulness."

Let us no longer view our country as a certain area of land with mountains, rivers and woods, but as a principle based on humanity and justice. Never was there a time like the present for the coal miners of America to serve, not only the nation, but humanity at large. If the men who mine coal lay down today our cause is lost. What is needed now is simple, unadorned, unpurchasable, incorruptible loyalty; and that means work every minute every day when there is an empty car to load with coal.

IDEAS AND SUGGESTIONS

Winding and Forming Armature and Stator Coils

BY FRANK HUSKINSON
Lafayette, Colo.

An important pump motor burned out so badly recently that it was necessary to rewind it completely with new coils. Not having any coils on hand, and as it would take months to get them from the factory, I decided to make up a set. With slight variations, the methods I used can be employed to make up a set of armature or stator coils for almost any motor.

The motor in this case was a 25-hp., 440-volt, three-phase, 60-cycle machine, with 72 coils. In Fig. 1 is shown the stator without the windings, except for one coil placed in the slots to show the proper span. The coils were rather difficult to make on account of the shape, there being two No. 13 wires in multiple, eight turns per coil, two wires in width and eight wires in depth. In making up the coils I used the winding device shown in Figs. 4, 5 and 6. I wound the proper number of turns and then secured the wires with heavy tin clips at four points, so the whole would retain its shape. In taping the coils the leads were first insulated with cotton sleeving and the linen tape was started at one of the leads. Holding the coil in a vise, the tape was wound on, the tin clip being moved just ahead of the tape. After a portion of the coil was taped the clip was removed and placed on the coil over the tape. This was necessary in this case on account of the flat shape of the coils. The heavy tin clip held the wires in their proper position; otherwise the coil would have buckled and become just a bunch of wires without any semblance to a coil. All the coils were taped, given a dip in thin shellac varnish and dried before forming to their proper shape.

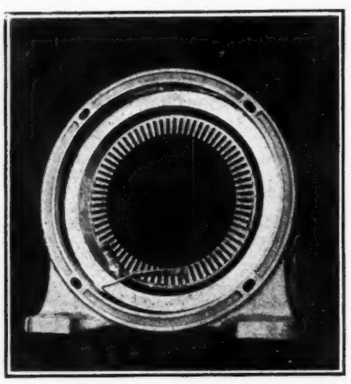


FIG. 1. STATOR WITHOUT WINDINGS
One coil is placed in the slots to show the proper span

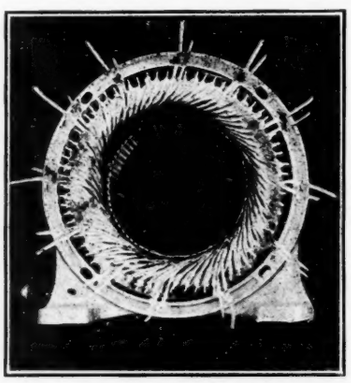
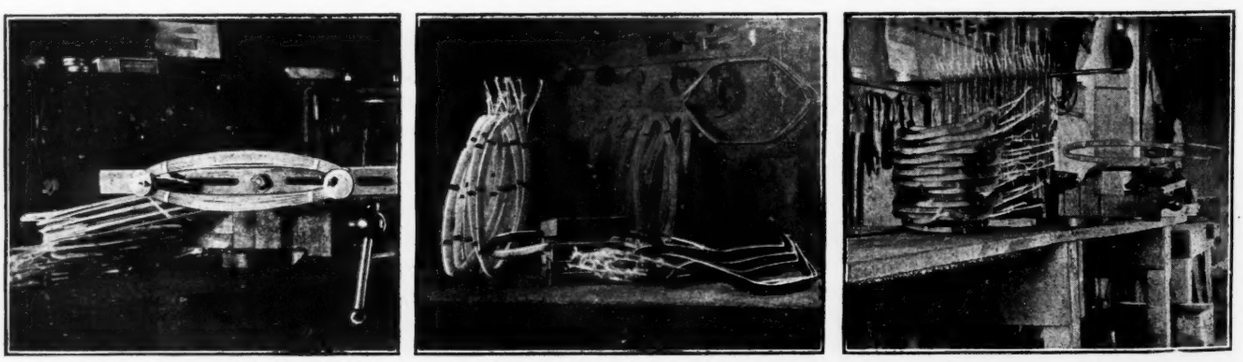


FIG. 2. STATOR WITH WINDINGS
The coils are in place and the group connections made

To form the coils to the proper shape a former block was made out of a suitable piece of wood, as shown in Figs. 3, 4 and 5. The bottom half of the former block was fastened in the vise, the bottom half of the coil was centered in the block, and then the top half of the block was centered on the top half of the coil. The top half of the block was then pressed down and shoved over to the stop block. Holding the blocks in this position the ends of the coils were bent downward as far as necessary to get the proper shape. It requires only a few seconds to form the coils to shape. The whole operation is simple, and each coil is a duplicate of the other. In Fig. 6 is shown the details of the adjustable coil-winding tool and the forming blocks used for this particular job. It is only necessary to change the dimensions of the forming blocks in order to shape any desired coil. I make a set of forming blocks for each style of armature or stator coil that I have to wind. I then mark the forming blocks and put them away for future use. Also, in winding a set of coils for the first time, I wind two extra coils. One of these I finish up complete, the other is left just as it comes off the coil winder. These two coils are kept with the forming blocks, so that all the necessary data and information on that one particular style of winding is at hand with the necessary forming blocks, and a new



FIGS. 3, 4 AND 5. OPERATIONS IN WINDING AND FORMING ARMATURE AND STATOR COILS

set of coils can be made up therefrom at any time. The adjustable coil-winding tool, shown in detail in Fig. 6, has a broad range of adjustment and can be used for almost any style or size of coil by simply setting the tool to the desired size. The disks are adjusted to the proper width and depth of coil. The center distance is adjusted to suit the requirements.

It is a simple and easy matter to wind coils rapidly

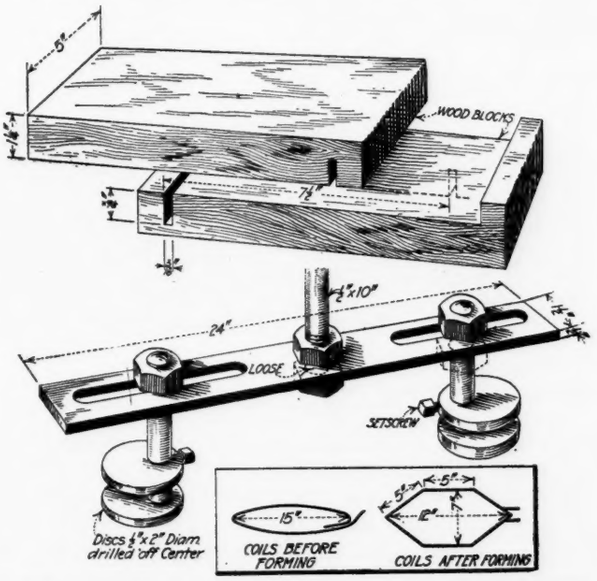


FIG. 6. DETAILS OF WINDING TOOL AND FORMING BLOCKS

and effectively with this coil-winding tool, and for giving the coils their proper shape there is nothing simpler than the forming blocks described. In Fig. 2 is shown the same stator illustrated in Fig. 1, with the coils all in place and the group connections made. This stator is completely finished, with the exception of the cross-connections and the phase connections.

Proper Housing of Mine Labor

The general manager of a large anthracite operation took me through a group of modern houses recently completed for his workmen. While he pointed to the improvements with considerable pride, he also spoke of the uphill struggle to teach certain foreign labor modern ways of living. It is not encouraging to go through one of your new houses and find an enameled bathtub filled with coal.

There are two ways to meet this problem. One way is to drop back to the workman's living level and build his house accordingly. The other way is to attempt to improve his domestic habits, and it may be well to add that the latter method is far from easy.

The wives and daughters of mine officials can and do play an important part in this work. They can accomplish results where men would meet failure; and yet a point is reached where even they are handicapped by the wide social gulf between them and the foreign workman's family.

The wife of a prominent coal operator who devotes much of her time to this important work is attempting to meet the difficulties with a New York architect skilled in housing labor. They erected modern houses and determined to lift the foreign element among the miners to our American ways of living. A scheme was tried of giving one house in a row rent free to an American family to be an example of cleanliness to the foreign neighbors. But the neighborhood got wind of this and refused to be decoyed into decent living. These foreigners seem to be shy of anything having the appearance of organized uplift. Thwarted in this plan they have resorted to bribing selected foreign families to be neighborhood models, but success depends upon the arrangement being kept secret. Where there are children in the family the foreigners are easier reached, as the youngsters carry American ideas home from school.

Those who have had the widest experience in work among this class know that great patience is necessary. It is no easy matter to uproot methods of living which have been handed down for generations. After unceasing efforts, you are encouraged by signs of improvement and you imagine the force of the old habits is yielding to treatment. Then there is a slump and you must start all over again. The discouraging thing about the work is the way these people can vary the form of their uncleanliness. If you succeed in correcting one bad habit it is apt to crop out elsewhere in an entirely different form, but the same old habit just the same. For instance, you persuade them to stop giving animals free run of the house. On your next visit you are impressed by the clean appearance of things. In passing a bed you wonder why wire netting is strung around the four posts near the floor. Looking closer you are apt to find that chickens are being kept under the bed. But patience and the right methods win in the end.

What Is Meant by Specific Heat?

By W. D. Owens
West Pittston, Penn.

What is mean by specific heat when this term is applied to material bodies? Water is with one exception supposed to be the most difficult of all substances to heat. The exception is hydrogen gas, which requires 3.40 times as much heat to raise its temperature over a given range as does water. But water is the standard by which other substances are compared. The increment of heat necessary to raise the temperature of water 1 deg. is called unity, or water is said to have a specific heat of 1; hydrogen, therefore, has a specific heat of 3.40.

All other bodies known require less heat to raise their temperatures 1 deg. than does water, therefore their specific heat is written as a fraction, usually expressed decimally. For instance, the specific heat of steel is 0.11 or 11 per cent. of 1. The specific heat of silver is 0.055, while that of gold is only 0.03. Air is more difficult to heat, its specific heat being 0.2375; that of carbon dioxide is 0.2183, while that of methane gas, or firedamp, is 0.593.

Where the term specific heat is mentioned the reader will now understand that it is the ratio of the amount of heat required to raise a given weight of any given substance (say 1 lb.) through any given temperature range (say 1 deg. F.) to the amount of heat required to raise the same weight of pure water through the same range of temperature.

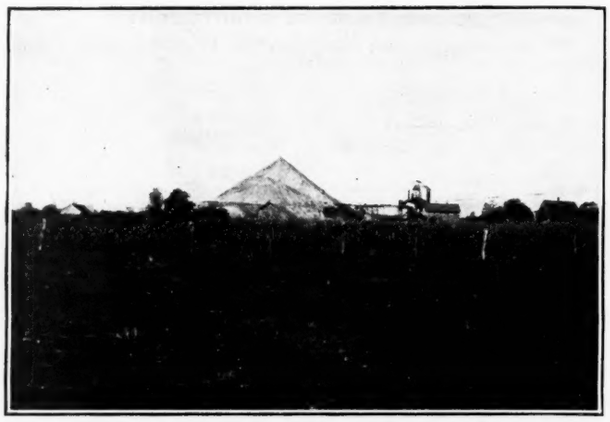
Present Illinois Coal-Mining Industry

By GILBERT H. CADY
Urbana, Illinois

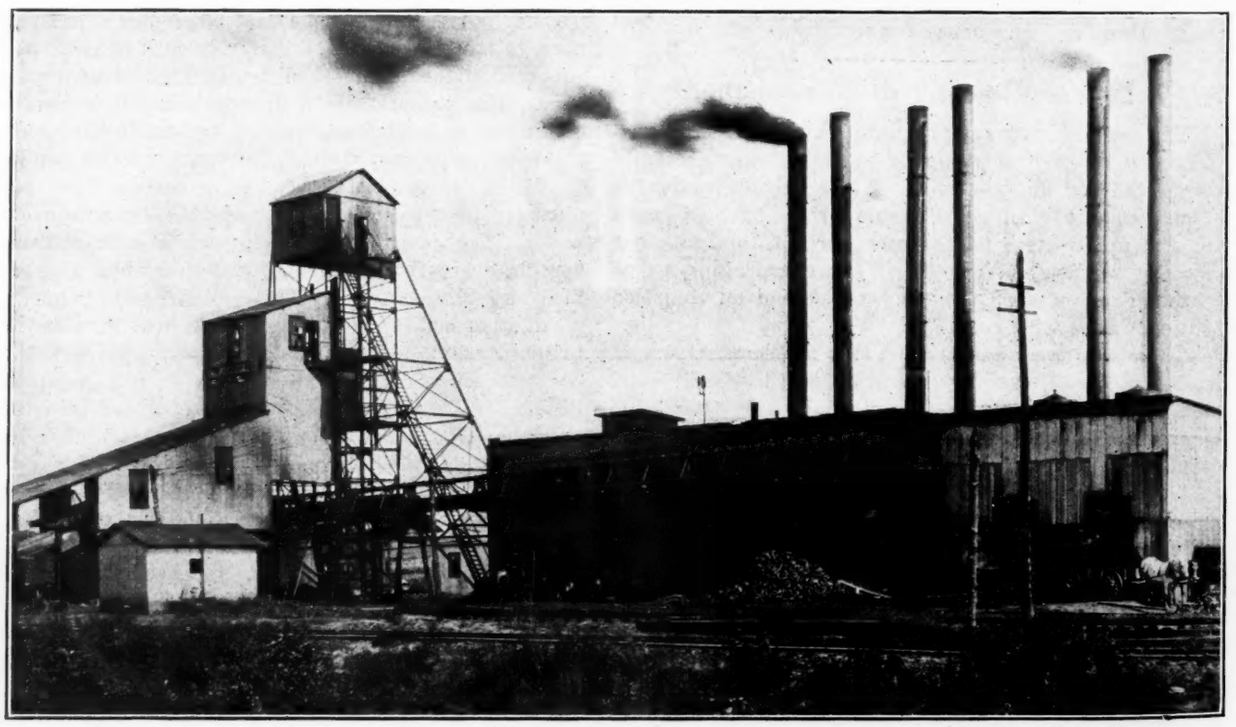
SYNOPSIS—*The coal-mining industry in Illinois is flourishing. Since 1900 the output has tripled and the percentage of machine-mined coal is steadily increasing. Stripping activity is also becoming pronounced. Large operations are becoming more numerous. The recovery of pyrite has not as yet received serious attention.*

STATISTICS recently published by the Illinois Department of Mines and Minerals, and general information coming to the attention of the State Geological Survey, furnishes abundant evidence of the flourishing condition of the Illinois coal-mining industry. The mines are working as large a proportion of the time as ever before, and an increasing number of operations of large capacity are being opened. The use of Illinois coal is being forced upon many consumers, many of whom probably will never return to fuels formerly used.

This and the additional fact that large corporations having a rather steady demand for coal have entered the mining field doubtless exercises a stabilizing influence which promises well for the future. The following review and summary of statistics compiled from the 1917 Coal Report of the Illinois Department of Mines and Minerals, with other information available, it is thought will be of interest as indicating the present condition and trend of the industry. The statistical data are summarized in Table I, which reveals interesting facts which may be listed briefly as follows: Since 1900 production from all mines and from shipping mines alone has tripled. The amount of machine-mined coal has increased more than eight times. The total number of employees has doubled since 1900, but the number of miners has been steadily decreasing since 1909. The number of shipping mines was steadily decreasing between 1906 and 1915, but has been slightly increasing during the last two years. The number in 1917, however, was only one more than the number in 1900. Since 1900 the number of mining machines has increased nearly five times and the average annual



MINE NO. 3 OF THE SPRING VALLEY COAL CO.
Distant photograph of the surface plant and a typical gob pile in the longwall district near Spring Valley, Illinois



TYPICAL SURFACE PLANT AT A MINE IN THE HARRISBURG (ILLINOIS) DISTRICT

TABLE I.—STATISTICS OF COAL PRODUCTION IN ILLINOIS SINCE 1900

Date	No. of Mines	Mines Shipping	Total Tonnage, Million Tons	Tonnage of Shipping Mines, Million Tons	Tonnage Mined by Machines, Million Tons	Working Days, Shipping Mines	Per Cent. of 300	Estimated Million Tons, 300 Days	Average No. of Miners	Total Number of Employees	No. of Mining Machines	No. of Motors	No. of New Mines	No. of Abandoned Mines	Date
1917	810	324	79	77⅓	47½	215	72	108	27,114	80,893	1,920	744	41	5	1917
1916	803	284	63⅞	62½	39¼	185	62	110	27,272	75,919	1,817	648	22	18	1916
1915	779	280	57⅓	56½	34	172	57	98	29,560	75,607	1,686	602	6	63	1915
1914	796	340	60⅛	59⅓	31⅓	174	58	102	32,262	80,035	1,828	540	10	41	1914
1913	840	371	61⅛	60⅓	30⅓	179	59	102	35,401	79,497	1,689	467	15	24	1913
1912	879	380	57⅓	56	25⅓	172	57	99	39,149	79,411	1,581	381	22	15	1912
1911	845	387	50	48⅞	20	169	56	87	39,912	77,410	1,430	303	29	32	1911
1910	881	390	48⅞	47½	18¼	179	59	80	39,069	74,634	1,289	229	27	71	1910
1909	886	384	49	48	16⅓	189	63	76	50,834	72,733	1,246	210	18	41	1909
1908	922	407	49⅛	47⅞	15⅓	191	64	74	48,931	70,841	1,160	185	16	20	1908
1907	933	411	47⅞	46⅓	14⅓	209	69	67	45,498	66,714	1,105	129	0	8	1907
1906	1,018	419	38⅛	37	9⅓	189	63	58	42,920	62,283	962	...	22	...	1906
1905	990	397	37⅛	36	8⅓	198	66	54	41,202	59,230	784	...	...	...	1905
1904	932	380	37	35⅞	7	213	71	50	37,987	54,774	623	...	...	...	1904
1903	933	353	35	33⅞	7⅞	222	74	45	34,904	49,814	522	...	...	...	1903
1902	915	332	30	28⅞	6⅓	210	70	40	32,875	46,005	464	...	...	...	1902
1901	915	331	26⅞	25⅝	5⅓	204	68	37	30,829	44,143	464	...	...	...	1901
1900	920	323	25	24	5⅛	214	71	34	27,875	39,384	430	...	...	...	1900

capacity of a machine has nearly doubled. The average number of days during the year in which shipping mines are in operation varies between 169 and 222, or between 64 and 74 per cent. of full working time of 300 days. Since 1906 the average number of shipping mines abandoned is 33. This rate of closure indicates a present average length of life of each shipping mine of about 10 years. The average number of new mines annually is between 19 and 20.

The statistics reveal a decided speeding up of production per mine in the last decade. This seems to have been brought about in a number of ways. The most evident source of the increase in production is in the increase in the number of mining machines. It may be noted that about four-fifths of the entire increase in production between 1900 and 1917 can be assigned to increase in the amount of machine-mined coal. Of the total increase of 54 million tons in those years, 42 million represents the increased tonnage mined by machines. It is also noteworthy that the effectiveness of the mining machine has greatly increased, so that in 1917 each machine produced twice the tonnage of the individual machine in 1900.

With the more widespread use of mining machines has gone the more general introduction of motor haulage, and probably also, though the statistics do not show it, an increase in hoisting efficiency. The increasing efficiency of individual mines during these years is indicated by the increase in the output of a mine near Gillespie, which in 1907 led the state with a production of 699,127 tons, and in the fiscal year 1916-17 had an output of more than one million tons.

A further cause of increasing production probably lies in the increase in the number of large operations. The tendency along this line is indicated by the figures given in the 1917 Coal Report. It is shown that the number of mines annually producing 200,000 tons or over has increased from 27 to 139 since 1900. The five largest mines in the state have each a production of between one million and 1,200,000 tons. Of the new mines being built or completed since June 30, 1917, at least four are planned for an annual production of more than one million tons. In comparison it is of interest to note that the total capacity of the four mines abandoned since June, 1917, was only about 600,000 tons. It is evident that operations of the larger type are meeting with much favor among operators. It should not be inferred, however, that large mines are necessary for efficient operation, for some of the smaller mines are being profitably worked.

The growth in number of the large 5000-ton mines is necessarily slow because of the large investment represented in the development of such properties. The recent more rapid increase in their number has been brought about by the entrance into the mining industry of Illinois of such wealthy coal-consuming companies as the United States Steel Corporation, the Standard Oil Co., the Byproducts Coke Corporation and the Chicago, Burlington & Quincy Railroad.

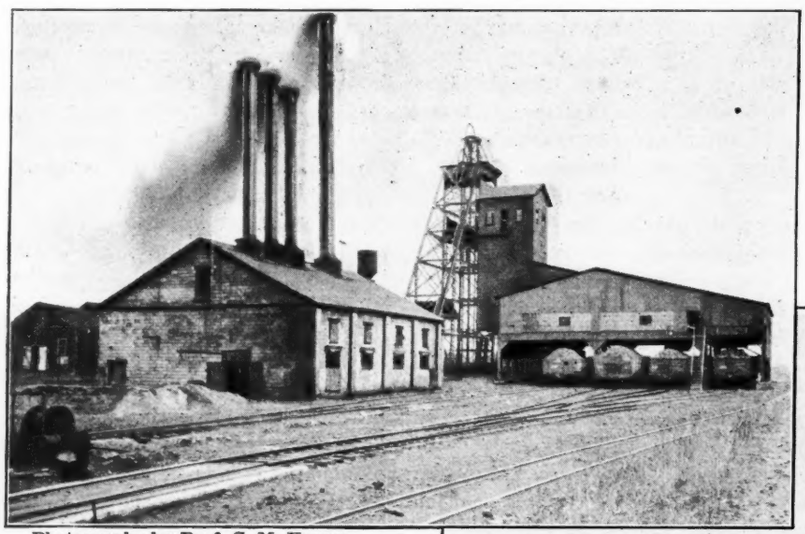
Increased productivity of Illinois mines besides being in part due to the increase in the number of machines and of large operations, is also due to the more general use of the most modern mechanical devices. Hoisting by skip is being introduced. In one of the large mines now being opened much modern equipment is to be installed, such as an electrically hoisted skip operated from the shaft bottom, a rotary dump, entry-driving machines and loading machines, besides the usual complement of chain cutters and electric locomotives commonly found in machine mines.

The desire to produce the coal with the greatest possible speed has resulted in one of the fields, at least.

SHAFT HEAD AT A FRANKLIN COUNTY MINE

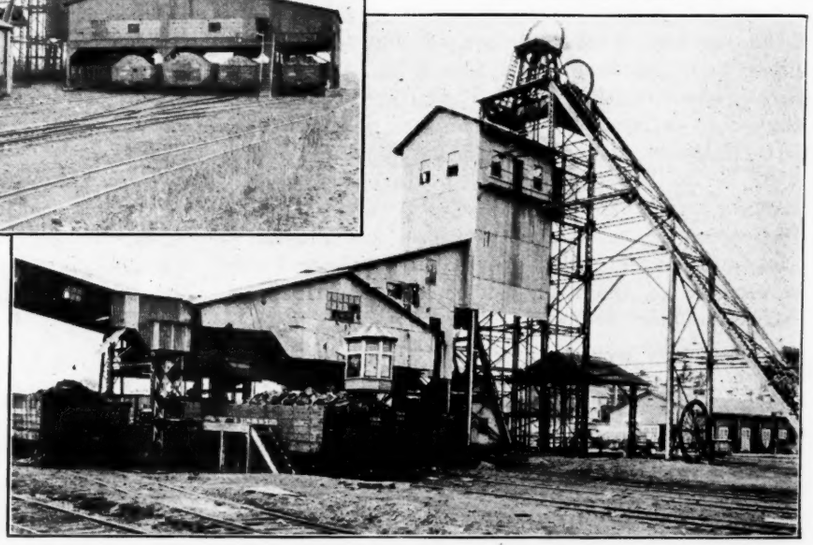
in a decrease in the percentage of recovery. In certain parts of the state, particularly in the Franklin-Williamson Counties field, the percentage of recovery has always been relatively low. Pillars have not been systematically pulled and, furthermore, where the coal is thickest the roof is regarded as poor, so that the top bench, having a thickness of 3 to 5 ft., is commonly left in the mine and is rarely ever recovered.

Recently it is becoming the practice of a greater number of mines in the area of thick coal not only to leave the roof but also to leave from 1½ to 3 ft. of coal in the floor below a persistent thin clay parting known as the "blue band." By so doing the chief source of clay impurity is not disturbed in the mining, and a product somewhat better than the average coal for the region is produced. Such coal has an enhanced reputation at least among domestic consumers, and in addition to its probable trade value the practice results in speeding up production and in decreasing the need of coal-cleaning operations at the shaft head.



Photographs by Prof. C. M. Young

ABOVE—MINE NO. 19, BYPRODUCTS COKE CORPORATION, WEST FRANKFORD, ILL.



BELOW—PEABODY COAL CO. MINE NO. 7 AT KINCAID, ILL.

More especially in the last 18 months than formerly, increasing interest has been manifest among coal operators and consumers concerning the variations in quality of Illinois coal. Probably part of this interest has been created by the large body of analytical data appearing in the publications of the State Geological Survey and the Illinois Coal Mining Investigations.

A working basis for the purchase and sale of Illinois coals on specification has been proposed in one of the publications by Prof. S. W. Parr. This plan recognizes the distinctive variations in the quality of the coals and has tended to establish a reasonable differential between coals of different rank. The purchase and sale of coal on specification is becoming more generally the practice, possibly to a large extent because Federal and state purchases are made on such a basis. One of the probable effects of this growth of the appreciation of the difference among Illinois coals is the decided movement of the center of production of the state toward the southern counties of the coal field.

In addition to the more definite knowledge concerning the chemical difference existing among the coals of the state, there has also come a better knowledge of the adaptability of the coal to specialized uses. Of significance along this line have been the experiments, largely of a private character, toward proving the adaptability of Illinois coal for making metallurgical and other coke. The results of these tests may be judged from the fact that large companies such as the United States Steel Corporation and the Byproducts Coke Corporation have recently made purchases of large properties in the southern Illinois fields, and from the fact that several byproduct coke plants in the Middle West now use Illinois coal for part of their charge. Of interest also is the recently announced plan of certain Chicago coal men to build a large experimental low-temperature coking plant for the manufacture of byproducts and a smokeless fuel.

The adaptability of Illinois coal of various grades to use in gas retorts has been the matter of recent investigations and experiment by the United States Bureau of Mines under the Illinois Coal Mining Investigations Agreement. Because of the increasing difficulty in obtaining supplies of eastern gas coal, many companies have been considering the possibility of using Illinois coals for at least part of their requirements. It has been demonstrated that the substitution can be made, and should the companies become accustomed to the use of Illinois coal at this time a certain percentage of them will doubtless continue its use because it will be relatively cheaper.

The recent agitation to accomplish a greater production of pyrite or coal brasses as a byproduct in coal mining has as yet yielded insignificant results in Illinois. There is a decided tendency on the part of the operators to withhold financial investment in what is regarded as an uncertain industry pending definite assurance of sufficient stability in the market to allow for the re-

covery of the outlay. Investigations by members of the State Geological Survey and the United States Bureau of Mines have substantiated a previous belief that a large supply of pyrite can be obtained from Illinois mines under a guaranteed price of not less than 30c. per unit or about $12 per ton for pyrite containing about 40 per cent. sulphur.

The desire to meet the increasing demands of the trade during the last few months as quickly as possible has resulted in considerable activity in the areas where stripping coal is available. Numerous new operations of this sort have been started along the southern edge of the coal field from the vicinity of Duquoin eastward nearly to Harrisburg along the outcrops of No. 6 and No. 5 coals. The greater number of these operations are between Duquoin and Marion on No. 6 coal. Some new stripping operations have been opened in Vermilion County, and there is considerable interest manifest as to the availability of coal in other localities, especially in St. Clair and Fulton Counties and in the longwall field in the northern part of the state.

Interest in the undeveloped resources of the state is indicated by numerous inquiries which are naturally directed to the Geological Survey. These inquiries have been much more numerous during the last 8 to 12 months than previously. Inquiries concern areas possibly underlain by the thicker coals, that is, coals 5 ft. thick or more, which lie in the southern or central part of the state.

There has been considerable exploration work in Madison and Macoupin Counties incident to the transfer of a large body of coal land near Carlinville. Aside from the drilling in this part of the state no considerable amount of actual exploration work has been done. Certain areas in Washington, Christian, Clark and Crawford Counties seem to be under special consideration by more than one company. The extension of the Indiana field into Clark and Crawford and possibly Lawrence Counties, Illinois, seems to be altogether probable. This would represent, however, an entirely new field in Illinois, and the possibility of its development is therefore of special interest.

British Coal Output

The British Home Office has issued some details of the output of coal in Great Britain for the year 1917. It appears that production, which from 287,411,869 tons in 1913 fell to 265,643,030 tons in 1914 and to 253,179,446 tons in 1915, rose in 1916 to 256,348,351 tons, but in 1917 fell again to 248,473,119 tons, a decrease of 7,875,232 tons from 1916. The number of persons employed at mines under the Coal Mines Act of 1911, which is one of the principal statutes regulating the working of British coal mines, was 1,021,340. This figure shows a decrease of 106,550 persons on the prewar year of 1913, but an increase of 23,277 persons on the figure for the year 1916. The rate of the decrease on the prewar figures in the output of coal is about 13.5 per cent., and in the number of persons employed at mines of about 9.4 per cent. The total number of persons employed will of course be considerably less in the near future, owing to the necessity of meeting military requirements. The release of 100,000 men from the mines as a preliminary step is already in progress.

The Patriot

By RUFUS T. STROHM

Every city, town an' village
Has a lazy, loafin' bunch,
An' they all allow they can tell just how
We should land the winnin' punch;
An' they think they're patriotic,
As they sit an' yap an' yelp,
But the good Lord knows that the talk that flows
Doesn't do a mite to help.

Now, the real sort of feller
Is a diff'rent breed of bird,
An' his only creed is the finished deed
Instid of a shouted word;
For his common sense has told him
That we're fightin' to the death,
So it's plain as sin, if he wants to win
He has got to save his breath.

His monniker may be Tony,
Or it may be Abe or Bert,
But sometimes his name is Marie or Mame
An' the owner wears a skirt;
Yet you're allus sure to meet him
Where the nation's pulses throb,
As he pegs away through the livelong day
At his own pertickler job.

You can find him in the office,
You can spot him in the shops,
An' he bares his arms on a million farms
As he gathers in the crops;
But no matter what he's doin',
He's strong for the common good,
An' there ain't a hint of a pause or stint,
For he keeps on sawin' wood.

Some Experiences with a Borehole

By A. W. HESSE and K. M. QUICKEL

Hellwood, Penn.

SYNOPSIS—*In a borehole that was to be drilled for the purpose of connecting electrically a surface substation with the mines below, the casing had to be cemented in place with extreme care to prevent the draining of a spring. This article enumerates some of the troubles and difficulties that were encountered before an unobstructed water-tight passage was secured.*

THE drilling of an ordinary borehole and the placing of a casing therein for the purpose of dropping a cable from a substation to the mine below, does not usually cause much disturbance in the daily run of affairs—if all goes well. The experience secured in drilling and cementing a borehole, as here described, however, has some value, because of the conjecture as to what happens when a gas or oil casing is cemented through a coal bed.

To begin with, it is necessary to know just why the method here described was followed. The plot of ground purchased for the substation and borehole site was only a few feet from a spring which supplies the farming community in that section with water most of the year; and before the purchase could be made it was necessary to agree that this water would be prevented from leaking away through this borehole into the mine. Also the mine work was still 300 or 400 ft. away from the borehole.

Trouble Started with the Casing

The contract was let for the drilling, and on Sept. 5 the hole was ready to have the 6-in. casing placed and cemented. The contract called for an 8-in. hole, but when the 6-in. casing reached a depth of about 100 ft. it stuck. A measurement of the collars on the casing showed that the bit must have been allowed to taper down to less than 7⅞ in. By a compromise, it was decided to put in 5-in. casing. This was immediately ordered, and the drill was allowed to go to another job.

When the 5-in. casing came, a three-pole rig was erected and the casing started in; but at 105 ft. it also stuck! Apparently the hole had bridged and there was no alternative except to call back the drill. This was done; but the drill did not get back until the middle of November. The hole was reamed out and drilled 2 ft. deeper, making a total depth of 245 ft. The mine work had not yet reached the hole.

For fear that the cement grout would not get down far enough around the casing to seal off the water, it was decided to drop the cement into the hole before the casing was set on the bottom, then on dropping the casing bail the cement out of the casing and pour it around the top until the annular space around this pipe was completely filled to the top. One of the company's masons was placed on the job to mix the cement and see that the work was properly performed. He reported everything satisfactory.

The place driving to connect with the borehole reached the spot on Jan. 5, but found no borehole. The surveys showed careful work and were properly tied in, or proved. Having by this time lost all faith in the driller's reports, and noticing discrepancies between his data and the surveys, it was decided to sound to the miners by tapping on the pipe. The distance from the pit mouth to the borehole is over 1½ miles and, owing to various conditions, it was not until Jan. 29 that a party could be sent to the hole outside. One person in pounding on the hole with a brick let more than half of it drop into the hole. On Feb. 4 another man in sounding on the bottom of the hole with a puncher pick, found his pick caught when he attempted to pull it out, evidently because of the half brick, and finally broke his rope, leaving the puncher pick in the hole. That day the miners reached the hole and found that the casing was plugged with cement. The driller had failed to get his casing onto the bottom of the hole by about 8 in. and the cement had risen in the pipe about 27 ft., as was proved later. At the immediate bottom of the casing only sand was found. This sand extended about 4 ft. inside the casing and at least 20 ft. up the outside. Above the sand within the pipe came alternate layers of cement, cement grout and sand.

The attempt to force the cement loose in the pipe by means of a screw jack failed. We then tried fishing out the puncher pick so we could drill out the cement from above. This failed because of the overlying brick. We then decided to try driving the cement out by dropping a 5-ft. mine-locomotive axle on top of it. After dropping it from various heights, it was finally dropped 210 ft. and stuck in the cement so tight that the rope (¾-in., new) was broken. The next expedient was to drill the hole out from the bottom. A bit was made, gaged to 4 in., 1½-in. pipe was cut and threaded in joints of 2 ft., a set of iron clamps was made which held an improvised thread box, and a ratchet and threaded bar completed the equipment.

The Cement Had Not Set Hard

The cement was drilled out to a height of 26 ft. in 10 hours, showing that this material had set to a sort of fireclay paste consistency in three months' time. When the bit reached the puncher pick it caught, and no more cement paste could be got out. The next day water was poured in at the top of the hole, and the pick point washed out. We then tried to lift the axle with the drill rods and screw jack without effect. The bit was then put in and more material drilled out up to the axle. On Feb. 27 more water was poured in the hole in hopes of washing out the axle, but finding the water did not escape very rapidly, the pipe was filled to the top and allowed to stand.

The substation equipment not having arrived, it was not until Mar. 5 that we tried dropping a 200-lb. piece of axle on top of the one already in the hole. The 4 ft. of water then in the hole escaped rapidly, and the big axle moved about 8 in. Again, on Mar. 8, the axle was

once more dropped in the hole and, after several hits, the hole was cleared except for a little mud still clinging to the sides. This was easily removed from below.

It was still impossible to see daylight by looking up the hole from inside the mine, so to satisfy ourselves that the surveys were not off 11.8 ft., as shown inside the mine, we decided to determine, if possible, if and how much the hole had drifted. A flashlight was placed in a can and lowered in the casing. At 72 ft. from the top the casing was observed to bend, and at 105 ft. the light was just visible; while at 114 ft. not even a reflection was discernible.

We then took five cans of melted paraffin and lowered them in the fluid state to a depth of 100, 150, 180, 210 and 240 ft. respectively, and allowed the paraffin to harden while suspended at these depths. We then measured the tilt of the cans off the level of the paraffin and found the respective angles of deflection to be 2 deg. 35 min., 5 deg. 56 min., 3 deg. 40 min., 2 deg. 24 min. and 7 deg. 29 min. Upon platting these deflections on paper to a scale of 1 in. = 10 ft. we found that the hole drifted 11.7 ft. in the general course of the error found in the mine.

While the cement did not set to its proper hardness within the casing, its consistency on the outside was such that the hole is perfectly water-tight.

Combined Coal and Gas Firing

By M. Meredith
Liverpool, England

An interesting example of the mechanical firing of boiler furnaces with gas and coal is afforded by an installation in operation at the South Staffordshire Mond Gas Co.'s works, Dudley Port, Tipton, England. The plant comprises eight producers, each capable of gasifying 20 tons of fuel in 24 hours, and generating sufficient gas to drive internal combustion engines of 2000 hp. continuously. The total capacity of the present plant is thus equal to 16,000 horsepower.

The rail or water-borne fuel is loaded by hand into bunkers, and thence fed automatically into two conveyors, each having a capacity of 40 tons per hour. These distribute the fuel into the storage bunkers over each set of producers. Each bunker holds 40 tons—that is, sufficient to keep the producer working for two days. The gas from the producer is thoroughly washed in mechanical washers, passed through ammonia recovery apparatus, also through the scrubbers and the meters, before being compressed and sent through the mains for distribution.

Since for each ton of coal gasified more than two tons of steam has to be supplied with the blast entering the firegrate of the producer, a considerable amount of steam has to be provided. More than half the total required, however, is obtained from the system of recuperation by circulating the water in the Mond producer plant. The steam for this purpose is raised at a pressure of 120 lb. per square inch, and after passing through the various engines and pumps where it does work, the exhaust is collected and mixed with the air supply to the producers.

It being necessary, for equalizing the station load, to fire with gas alone during part of the day, and to employ coal in addition during the time when the demand for gas is high, the Lancashire boilers employed have been fitted with Bennis "sprinkler" stokers. The gas ducts are led into the top flange of the stoker front and secured by means of a gas-tight joint. The baffle plates, which are situated behind the front, are provided with a passage, the outlet being above the grate; the gas thus passes from the ducts to the furnace. There are two ducts to each flue—that is, four to each boiler—each pair containing a breeches pipe placed immediately behind the hopper and passing thence to the gas supply. This constitutes an extremely simple and satisfactory arrangement.

It being essential that air should have access to the gas, a valve with an adjustable cover is placed on the furnace front to regulate the amount of air supply. The air is conveyed into the furnace through a separate air duct and does not mix with the gas until it reaches the inside of the flue, where ignition takes place.

A test lasting 40 hours with gas firing alone has shown an efficiency of boiler and furnace of 79.1 per cent. Other interesting figures from this test are the following: Steam pressure, 84 lb. per square inch; temperature of steam after superheating, 332 deg. Cent. (630 deg. F.); volume of air supplied per 100 cu. ft. of gas burned, 158.6 cu. ft.; losses to chimney (after passing superheaters and economizers), 11.4 per cent.

The steam from the boilers is led to the various parts of the plant by ring mains, so that each steam-driven machine can be supplied through at least two separate lines. The Lancashire boilers, measuring 9 x 30 ft., are fitted with extended flues. They are also fitted with superheaters, the gases discharging into an economizer containing 4000 sq. ft. of heating surface.

A guarantee was given by the stoker makers that the evaporation of each boiler should not be less than 12,000 lb. of water per hour, with an overload evaporation of 15,000 lb. per hour when desired for short periods. An efficiency of 72 per cent. was also conceded. This has not only been borne out in the tests carried on by the staff of the South Staffordshire Mond Gas Co., but also appreciably exceeded. For instance, an overload evaporation of 17,000 lb. of water per hour from each boiler, instead of 15,000 lb. per hour, was obtained.

Prior to the installation, much inconvenience had been experienced owing to the fact that steam was required to be kept both during the night and from midday Saturday until Monday morning, when it was desirable that labor duties should be at a minimum; but since the introduction of the combined system of firing, the desired flexibility has been attained. A thermal efficiency of 73 per cent. has been secured during a six months' run under all conditions and variations of load, including times when parts of the plant were off for cleaning and inspection. The average quantity of water evaporated per boiler per hour for a month's run was 14,880 lb., during which period the boilers were fired with slack during the day and gas during nights and over week-ends.

Remember that National War Savings Day is June 28. Pledge yourself on or before that day to save to the utmost of your ability and to buy War Savings Stamps that there may be more money, labor and materials to back up those who fight and die for you.

You may not be able to fight, but you can save and buy War Savings Stamps.

Coal Mine Photography—III

By H. A. WILLIAMSON
Fairmont, W. Va.

SYNOPSIS—*It makes little difference so far as photographic reproduction is concerned what style of lettering is employed on a map so long as the lines are sharp and distinct. However, plain letters are preferred to more elaborate designs. The conventional signs used by the United States Geological Survey are excellent for mine maps if augmented by suitable symbols for underground work.*

STYLES of lettering and methods of showing specific features by use of conventional signs vary to such an extent that it would be impractical to attempt to illustrate or classify them in anything less than a book on the subject. There are, however, certain letters and signs which can be used to better advantage than others on map work where this map is intended for photographic reproduction.

The accompanying illustration is not an attempt to give all or even most of the signs in use, but it does show some of the most common and most suitable for photographic reproduction.

Lettering for photographic work can be almost any style, so long as it is made with clean clear lines. Ornate types are to be avoided. Simple lettering is easier to produce, looks much better, and is more clearly readable after reduction than such styles as Gothic or other complicated forms. The most important single feature on a map for photographic work is probably the scale. The scale shown in the illustration is the one in almost universal use; it makes no difference how much it is enlarged or reduced it is always correct, while any proportional scale is immediately in error on reduction or enlargement.

Proper Indication of Points of Compass

Another item of importance is the indication of the points of the compass. If coördinate lines can be used, and especially if the top of the map can be made the north, it is a far better way than using a north point and having every map laid out with the north direction different. Further, if the latitude or longitude, or both, can be placed on a map it is an advantage as, for example, it allows the location of large scale, small area maps on small scale, large area maps in order to get location of particular points with relation to railroads or other features.

For photographic map work there are no better signs and letters than the standards of the United States Geological Survey. Sheets of these can be obtained from "The Director," United States Geological Survey, Washington, D. C., at 10c. each. However, they do not show underground features, nor various special features, and it becomes necessary to adopt standards to fit the needs of the particular kind of work carried on.

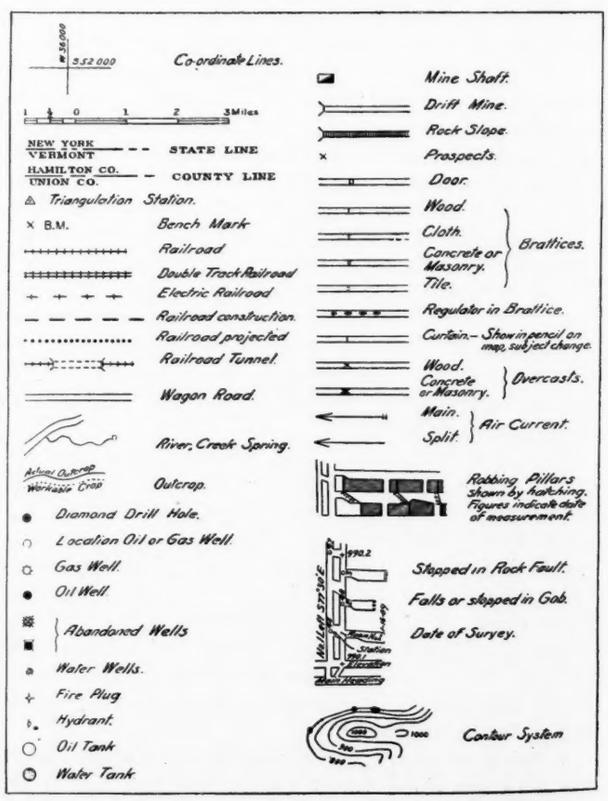
Both in lettering and in signs it is only necessary to remember that simple designs and sharp lines photograph to best advantage, and, as stated in a previous article, a minimum size of letter of $\frac{1}{10}$ in. high is a good standard for five-time reduction.

Where it is necessary to show various features in color, political features are usually black, hypsography brown, hydrography blue, timber areas are tinted over with light, transparent green, triangulation and other surveys either in black or red.

It might be well to mention here the matter of erasures or corrections to maps. It is frequently the case that errors are made or changes desired requiring a large amount of erasing. This is often tiresome and dangerous, particularly on tracing cloth. Much of this work can be avoided by simply leaving the incorrect parts on the map and later opaquing them off the photographic plate.

For the benefit of those draftsmen, with some knowledge of photography, who may desire to carry on photographic map work, I give below a standard method of development, intensification and reduction, and opaquing, together with a note on the rapid drying of glass negatives. (With the exception of the drying process all of this will answer equally as well for the various types of film.)

Presuming that the desired exposure on a suitable plate (with screen if necessary) has been made, we are in a position to start work in the darkroom. Following is the developing formula given in the first article of this series, but here repeated with additional



SCALE IN ALMOST UNIVERSAL USE WHICH MAY BE ENLARGED OR REDUCED WITHOUT ERROR

notes: Water, 15 oz.; sodium carbonate, crystals, ½ oz.; sodium sulphite, crystals, 1 oz.; potassium bromide, crystals, 15 grains. This will keep indefinitely, can be made up in quantities and called a "stock solution."

To develop contrast, or commercial, plates, also tri- or panchromatic plates, for linework: Use the foregoing solution full strength, adding three grains of dry pyrogallic acid for each ounce of solution just when ready to immerse the plate.

To develop out-of-door exposures (or flashlights), roll film and miscellaneous copy work where it is desired to show detail: Use one part of the foregoing solution and two parts water, adding two grains of pyrogallic acid for each ounce of "ready-to-use" solution.

To develop advertising lantern slides: Use one part of stock solution and three parts of water, adding two grains of pyro per ounce of "ready-to-use" solution.

The temperature should be 70 deg. F. Density comes slowly, but the negative should be fully developed in two to five minutes. When developed immerse in: Water, 16 oz.; citric acid, 30 grains, for 30 seconds, and then fix in standard acid fixing bath.

If after fixation and washing the plate should be somewhat under or over exposed, the following method is probably the best now known for reduction or intensification of linework negatives. First be sure the plate is thoroughly washed.

Solution Removes Veiling of Lines

To reduce or remove any veiling of lines use the following solution: One-half dram 10 per cent. solution potassium ferricyanide; 2 oz. hyposulphite soda; 10 oz. water.

This preparation can be used locally or all over the plate. If it is simply desired to reduce an over-exposed plate, the foregoing bath, followed by thorough washing, is all that is necessary.

If the plate is weak, after removing any veiling of lines with the solution given above, wash at least 15 min. in running water and use the following intensifier (Monckhoven's formula). First, bleach through to the back in a solution of mercury chloride, 100 grains; potassium bromide, 100 grains; water 20 oz. When bleached wash 15 min., then darken in the following:

Dissolve 100 grains silver nitrate in 10 oz. distilled water. In another 10 oz. of distilled water dissolve 150 grains potassium cyanide; add silver solution to this in small amounts until the point is reached where the curdy precipitate, which forms as the silver is added and at first disappears completely, does not redissolve. Flow this over the plate, but remove the negative from this solution and wash promptly as soon as the plate is darkened through to the glass side. Too long a time in this will reduce the negative. (The foregoing solutions can be used repeatedly.)

Frequently pinholes or air bells will occur on negatives, and also it is often desirable to cut out some part of a map without actually erasing it from the original. After the negative is thoroughly dry these undesired parts may be blocked out of the negative with opaque. For this work a simple retouching stand may be purchased, or a hole, of suitable size, can be cut in a box, a light placed within the box and the plate placed over the opening. It is a simple matter to block out the undesired parts, using "Alvords" opaque and a medium sized camel's hair color brush. The opaque should be worked as thick as can be conveniently handled and allowed to dry thoroughly before the negative is used.

It is sometimes important to obtain final prints from negatives within a brief time. By having a fresh and strong fixing bath, the negative is fixed in about 3 or 4 min. Remove the plate from the fixing bath and rinse; place the plate in a tray which will just accommodate it, cover with water to half the depth of the tray and add 6 grains of potassium percarbonate for the equivalent of every 4 x 5-in. plate (rock tray)—remove negative when liquid ceases effervescing and wash 3 to 5 min. in running water, then place in bath of wood alcohol for 1 or 2 min.; remove from this and place before an electric fan or in a draft. The plate will dry rapidly by this method. If the fan is just in front of a heater, so that warm air is drawn through onto the plate, the drying will be still more rapid.

Prints can be made with ordinary blueprint paper; or if higher grade work is desired any of the ordinary photographic papers can be used. There is also on the market an excellent photographic cloth which is specially desirable for map work in connection with reports and other data that are desired in lasting form.

Lump Coal for Locomotive Service

Until recently nearly all coal used on locomotives was mine-run—the entire unscreened product of the mines. In the past few years, however, increasing quantities of screened lump coal have been used in locomotive service. This increase in the consumption of lump coal has been due partly to the belief that lump coal, when burned on a locomotive, produces enough more steam than mine-run coal to compensate for its greater cost. Special considerations, such as the desire to lessen the amount of smoke formed, have also led in some instances to the use of lump coal, which is generally believed to require less skill in firing than mine-run coal. The introduction of the mechanical stokers for locomotives has resulted in the use of increasing amounts of various sizes of screenings. Thus far there has been little use of such sizes as egg, egg-run, and nut coal on locomotives, although traffic and market conditions occasionally make it feasible and desirable to use them.

The relative values of several sizes of coal for locomotive use have not been well understood since most laboratory and road tests have been made with mine-run or occasionally with lump coal, and the data are inadequate and conflicting.

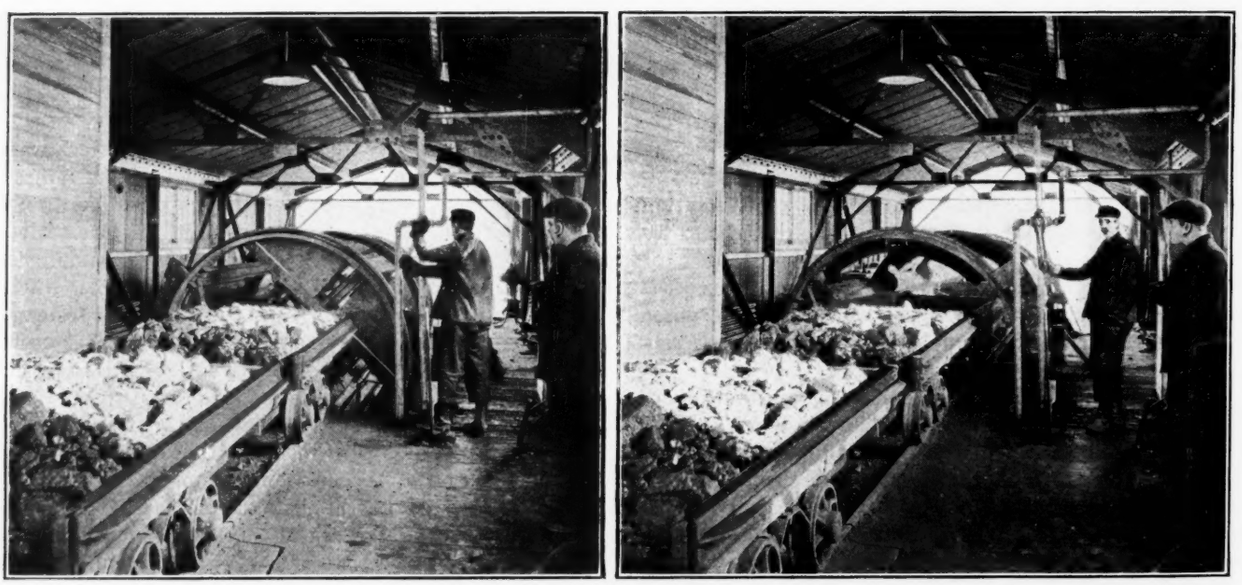
A series of tests to determine the value of different sizes of coal has been conducted by the Engineering Experiment Station of the University of Illinois under a coöperative agreement with the International Railway Fuel Association and the United States Bureau of Mines. A Mikado locomotive weighing 142 tons belonging to the Baltimore & Ohio R.R. was used, the tests being made in the locomotive laboratory at Urbana. The results are published in Bulletin No. 101 entitled "Comparative Tests of Six Sizes of Illinois Coal on a Mikado Locomotive," by E. C. Schmidt, J. M. Snodgrass and O. S. Beyer, Jr. Copies may be had without charge by addressing the Engineering Experiment Station, Urbana, Illinois.

Hoisting Coal in Skips*

By JOHN A. GARCIA
Allen & Garcia Co., Engineers, Chicago, Ill.

IT IS somewhat remarkable that with the wonderful progress in mechanical and electrical engineering at coal mines in the last ten years or so, and improvements made in methods of mining, the two main contributing causes for most of the troubles in operation have not only been neglected, but deliberately aggravated—that is, low percentage of extraction and vicious speed in caging and hoisting.

In the Middle Western coal fields, excepting, of course, the longwall mines, the extraction is no better today than it was a generation ago; and in southern Illinois several of the most modern mines were recently found to have made an extraction of only 48 per cent. over a period of about six years. Such extraction leads to sealed-off gas areas, squeezes, short life, long haul and difficulties in operation too numerous to mention; and the solution of the problem is worthy of the best efforts of the best men in the industry. However, this is outside the province of this discussion.



DUMPING CARS AT GRANVILLE TIPPLE WITHOUT UNCOUPLING

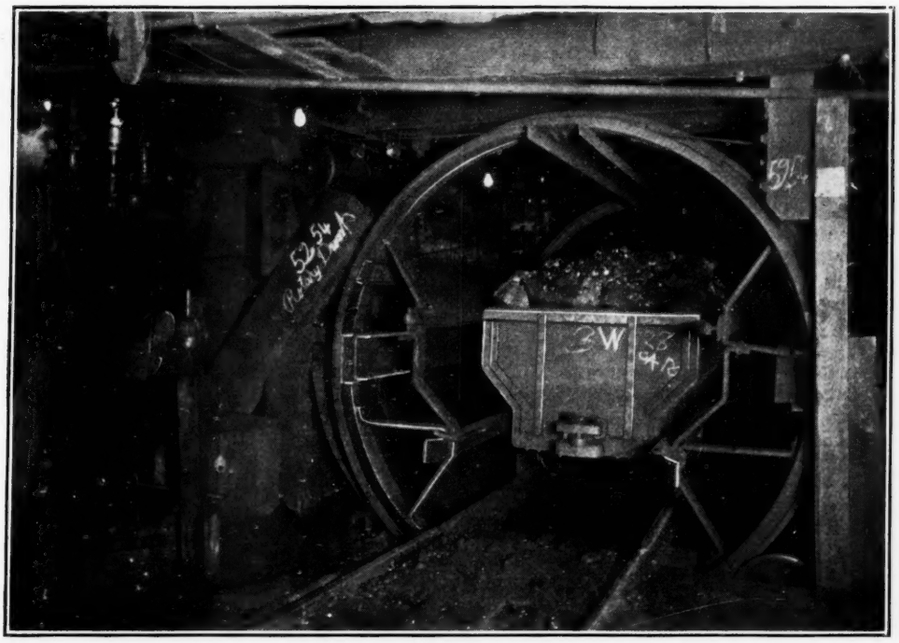
The second major problem—speed reduction—involves, of course, maintenance of existing output or opportunity to increase capacity, as there never was a mine where the output was satisfactory, the boss, like Oliver Twist, always asking for more. However, it is impossible in an existing mine to decrease caging time and rope speed without decreasing output, unless the weight of coal per hoist is increased, which apparently can be done only by enlarging the pit car; and this is often impossible. But even when it can be done, the size of the car cannot be increased enough to materially affect the speed of the hoist, and this fact leads to the question of skip hoisting.

The self-dumping cage has been developed from a crude mechanical freak into a device or machine worthy of admiration, and almost respect. Traveling, in some instances, at the rate of 4800 ft. per minute along vertical slides several hundred feet long, dumping a pit car without manual assistance, reseating and dropping back down the shaft at terrific velocity, to be retarded and reset on the sump logs without breakage, often three to four times a minute, eight hours a day, every working day in the year—these are conditions no engineer or designer could meet. The self-dumping cage of today is therefore the product of hard experience, the result of years of persistent and stubborn effort to perfect, strengthen the weak points as they developed, and to adapt it to the constantly increasing demands.

When the cage was first invented, 1000 tons per day was a fair output, and there was every reason for using it as against the stationary platform; but custom and habit in coal mining dies hard, and it was many years after the first self-dumping cages were used before they were in general use. Even today, with our intensive production, we quite often find a mine equipped with a fixed cage, though probably no new mines have been developed in recent years having this type. From 1000 tons we graduated into 2000, and the cage was developed to match the output. Suddenly the capacity of newer mines jumped to 3000 tons, and the hoisting problem became quite serious; the cage began to take on lines of mechanical design, the safety catches offered fair field for the inventors' talent, the automatic stop and caging machine came into service and the construction of mine cars to meet the rough usage and constant dumping shocks became an important feature of mine shopwork.

From 3000 tons the ambitious and progressive operator pushed on to 4000, and the mechanics of hoisting became a science. In the last three years we have

*Paper read before the Peoria meeting of the Illinois Mining Institute, May 23, 1918.



ROTARY DUMP WITH CARS IN POSITION FOR DUMPING

come to realize the 5000-ton-per-day mine, and the end is not in sight. Recently the mine of the American Coal Mining Co. at Bicknell, Ind., took the world's hoisting record for a single-car, self-dumping cage, producing 5911 tons in a little less than eight hours, using four-ton pit cars and with a total lift of about 360 ft. That means a rope speed of 3100 ft. per minute, caging cars often at the rate of four per minute and an average of over three per minute all day long.

It may be safely assumed that coal mining has not reached such an advanced state of development temporarily, and that the hoisting problem is going to be confined to a few "freak" mines, or to isolated districts.

The march of progress and the keen competition in normal times forces maximum output for minimum investment, and under modern conditions the cost of building and developing a new mine is so high that large capacity is the only way to realize, in a reasonable period of time, on the investment.

However, it is not only dangerous to life and limb and destructive to valuable property to maintain such excessive speeds in production, but it is bad business policy to operate on a schedule that requires every man in the organization to be constantly straining for what is considered a normal output or to put the machinery of a plant constantly and continuously to the breaking test. There surely was some method whereby shaft hoisting could be brought down to the safe and sane plan that well-organized factories with intensive production operate on, and to this end the engineers of the Allen & Garcia Co. began a study of the problem about five years ago.

The first result of this campaign was a self-dumping cage designed to eliminate shock, to prevent overturning in the shaft and to operate at the dumping point without consuming, at that place, 25 per cent. of the total power required for a cycle, as is necessary in the ordinary cage. This result was obtained after four installations had been made, and the mine at Bicknell referred to above was equipped with this type of cage. That mine, however, was built for 3000 tons, and when the development work underground went on beyond the designed capacity of the shaft and hoist, they simply speeded up all along the line until they reached the extreme limit of almost 6000 tons and an average of over 5000. It then became apparent that the engineers must make the hoisting capacity so great that there would be no possibility of mining and hauling a tonnage that would require excessive rope speeds, and the only practical answer was the skip; so a thorough investigation of skip design was made and data accumulated on the few installations made in this country.

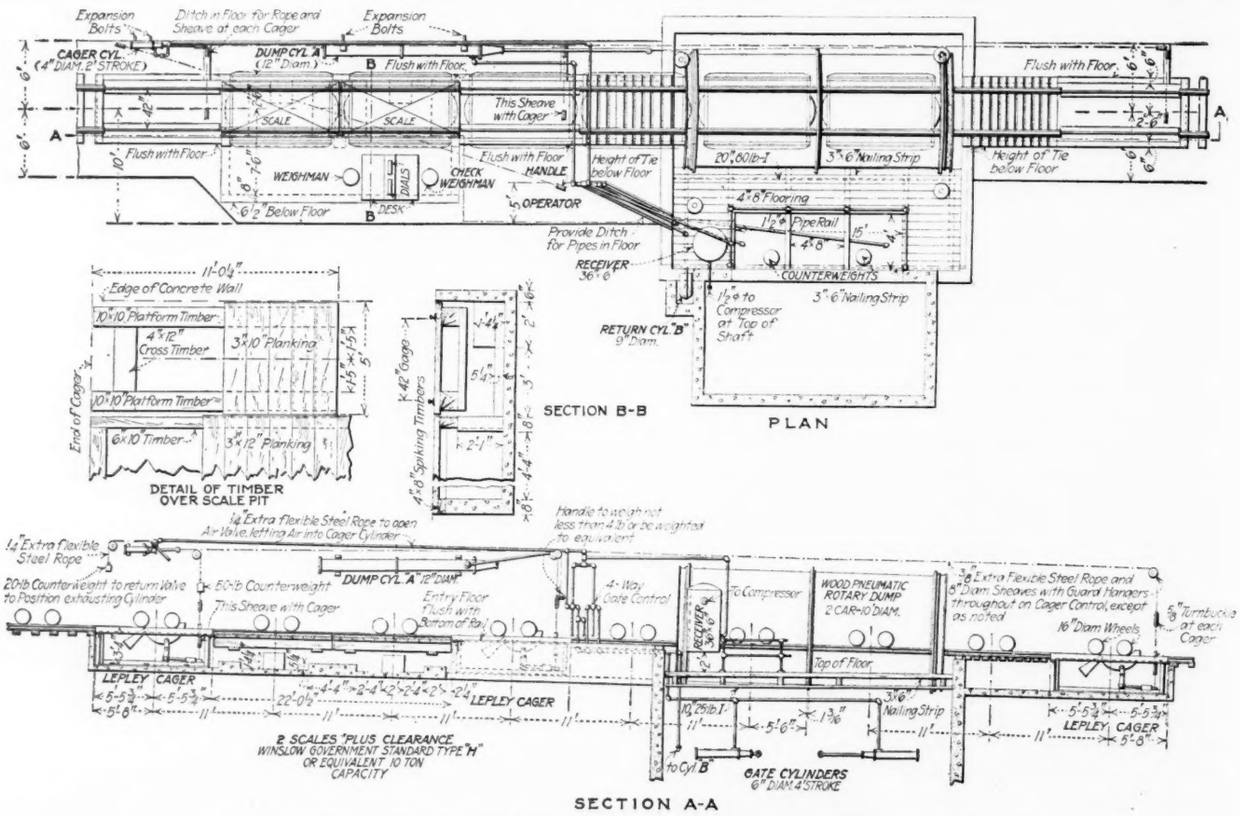
The information secured on existing installations in this section was disappointing. None were found that were satisfactory, and mining men everywhere were inclined to condemn the system as impractical. Each case was analyzed and studied carefully, and in the end it was found that there was something radically

ROTARY DUMP AND FIXTURES AT SHAFT BOTTOM

wrong with each installation in both general design and in details of construction.

The nearest approach to a success was at the Zeigler mine, and here the hoisting feature of the problem had been solved; but the dumping, both at top and bottom, condemned the whole design. At this mine drop-bottom cars were used, the coal dumped direct into a deep pit holding about 50 tons, and from this pit, or underground bin, the coal flowed through a gate, operated by a compressed-air ram, into the skip, which held approximately eight tons. The drop-bottom cars caused endless trouble, the fall of the coal from cars to bin and bin to skip, together with grinding and crushing in the pit itself, smashed the lumps and greatly increased the percentage of screenings. The outlet gates in the bin were under test, four dumps of two cars each per minute, or 32 tons per minute, which means a theoretical capacity of over 15,000 tons per day. If the mine ever reaches even half that tonnage, there will be no need of "speeding her up" as far as dumping the pit cars is concerned.

In order to eliminate the bin with resultant breakage, the designs for new mines were worked out to place the dump along the side of the shaft, the center line of the dump being parallel with the plane of the two hoisting ropes and far enough back so that the coal could flow to either skip over a steel-lined chute, avoiding all drop excepting the fall from the end of the chute into the skip. The coal is diverted to either skip by means of a movable plate or traveling vane, pivoted at



DETAILS OF UNDERGROUND ROTARY DUMP, SCALES AND OTHER EQUIPMENT

30 to 40 ft. down below the mine rails where the dust and darkness prevented the operator from seeing the skip while loading, with resultant part loads or overloading. The skips discharged in the tipple into a large bin holding about 50 tons, where the breakage was further increased.

In searching for a dump that would meet all the requirements of a coal mine, the pneumatic rotary dump invented by A. H. Wood, and installed at his mine at Kildav, Harlan County, Kentucky, was discovered. After most careful examination and analysis of design by independent engineers, it was pronounced satisfactory, and Mr. Wood was awarded a contract to install a two-car dump in the Zeigler mine. The outfit was put into service in December, 1916, and has been in operation continuously ever since with no troubles of any kind, and is capable of dumping the maximum tonnage the mine can make—in fact, its capacity is, the mid-bunton and pulled by a ⅝-in. cable across the flow chute to either end of the dump carriage. The design provides that the vane will automatically take the proper end of the carriage so that the coal will always flow into a landed skip and not into the sump.

Provision has been made for controlling the dump so that, if desired, the dump cannot rotate unless a skip is in place; on some installations cut-off gates at the end of the chutes are constructed to avoid leakage of small coal into the sump. These gates are opened by the descending skip and closed when the skip is hoisted, by a small counterweight.

The pneumatic rotary dump is a simple affair. The carriage is made of ordinary railroad iron bent to a true circle, and the several circles are fastened together with channels or other standard sections. These circles rest on trunnions similar to ordinary roller-bearing pit-car wheels; common sheet iron forms the shield that

prevents the coal from dropping as it flows over the side of the car as the carriage revolves, and the coal slides along the shield over the flow chute into the skip.

The dump is rotated by steel cables connected direct to the piston rods of two long cylinders over a series of small sheaves and operated by compressed air, so that the shock of the dump is cushioned on air at each revolution.

The power required is small indeed—a 10-hp. motor will furnish ample power for any ordinary two-car dump, but a small receiver should always be used to provide constant pressure and avoid pulsations.

The following is a comparative analysis of the skip and self-dumping cage systems, and demonstrates clearly the fact that an existing output may be maintained with a 40 per cent. reduction in rope speed and a material saving made in power requirements under certain conditions.

The reduction that can be made in the size of the hoisting equipment required for a given depth, tonnage, etc., varies from 10 to 70 per cent., depending largely on the rope speeds required under the two systems.

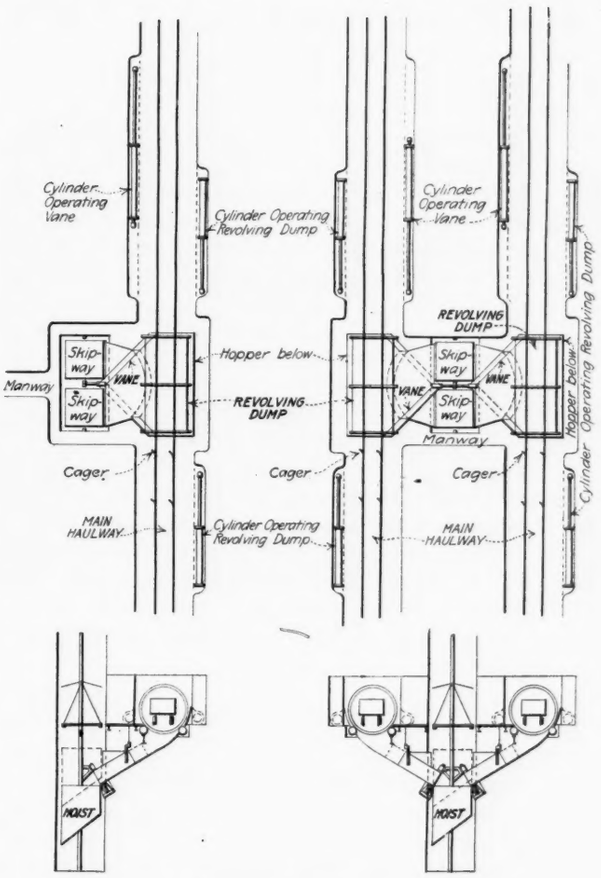
For hoisting conditions requiring only low or moderate rope speeds when the car and cage system is used, the substitution of skips would make only a little difference in size of hoisting apparatus. This is shown by the case of a shaft near Peoria, Ill., where the hoisting requirements were as follows:

Distance rail to dump	205 ft.
Weight of cage	6,000 lb.
Weight of car	1,300 lb.
Weight of coal per car	3,000 lb.
Capacity	250 tons per hour
Drum	Cylindro-conical

On the basis of an electric hoist the root mean square is 166 hp. (R.M.S.[1] = calculation of horsepower on heating basis). On the basis of an electric hoist and skips holding two cars, the R.M.S. is 162 horsepower.

On the basis of an electric hoist and skips holding four cars, the R.M.S. is 148 hp. In this case the average rope speed with the car and cage system is only 800 ft. per minute, and an increase in load carried and a reduction in rope speed makes little difference in either size of equipment or power consumption. In the foregoing case the power consumption is reduced from 0.505 to 0.504 kw.-hr. per ton.

[1]R. M. S. = the square root of the average value squared. Or it is equivalent to the continuous load (in horsepower) that would have the same heating effect on the motor as the fluctuating horsepower under consideration.



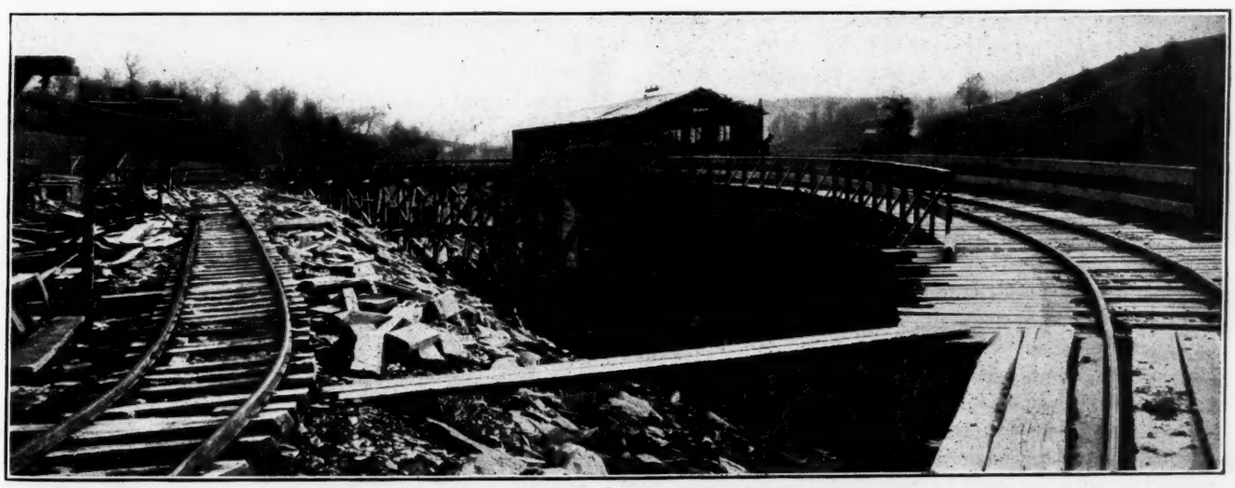
SINGLE AND DOUBLE ROTARY DUMPS

On the basis of a mine capacity of 4000 tons in six hours with the following:

Weight of car	3,000 lb.
Weight of cage	8,000 lb.
Weight of coal	8,000 lb.
Distance rail to dump	300 ft.

the R.M.S. is 671 hp., while, by using a skip hoisting eight tons, the horsepower would be reduced to 580. The rope speed is reduced from 24.8 to 15.6 ft. per second.

Recently an operator desired to electrify the hoist



TRACK ARRANGEMENT AT TOP OF GRANVILLE TIPPLE

in connection with a shaft near Springfield, Ill. The duty given was as follows:

Depth of shaft	250 ft.
Weight of cage	5,000 lb.
Weight of car	1,500 lb.
Weight of coal per car	4,000 lb.
Type of drum	Cylindro-conical
Time of cycle	16.5 sec.

This required a maximum rope speed of 35 ft. per sec. and a motor 700 hp. in size. In addition, in order to get safe and economical hoisting, it was deemed necessary to install the Ward Leonard system of electrical control.

By the installation of skips at this mine it would have been possible to secure the tonnage of 432 tons an hour with a 500-hp. motor; an induction-type motor could have been used, which at the present time would mean a reduction in cost of approximately $18,000.

At one of the Franklin County mines now equipped with a 1150-hp. hoist motor, the question of increasing the tonnage by 20 per cent. was recently discussed. To make this increase, retaining the cage and car system, required the installation of a 3000-hp. motor with forced ventilation, which is equivalent to about 4000 hp. with natural ventilation. The duty on which this was based is as follows:

Total hoist	667 ft.
Weight of cage	15,000 lb.
Weight of car	3,300 lb.
Weight of coal	10,000 lb.
Type of drum	Cylindro-conical
Maximum rope speed	4,375 ft. per min.
Number of trips in 7 hours	1,200

This increase in tonnage could be made by the installation of a 10-ton skip with a 1250-hp. motor. It is evident, therefore, that increasing the rope speed in cage hoisting, to obtain a fixed tonnage, means decreased size of hoisting equipment on the basis of skip hoisting for the same tonnage. The preceding examples are given on the basis of actual conditions which have come up in this field.

The actual results as obtained at the Granville colliery near DuBois, Penn., a recent installation, on caging and time of dumping, is given in the following dumping test:

TIME OF DUMPING A TRIP OF 20 LOADED CARS

In the Wood Equipment Co. two-car rotary dump, using swivel hitchings

	Time of Trip Travel, in Seconds	Time of Dumping (Two Cars), in Seconds		Time of Trip Travel, in Seconds	Time of Dumping (Two Cars) in Seconds
1st move	20	7	7th move	15	7
2d move	15	7	8th move	13	7
3d move	15	7	9th move	13	7
4th move	15	7	10th move	17	7
5th move	15	7			
6th move	12	7	Total	148	70

A total of 20 cars was dumped in 218 sec., or an average of one car every 11 sec., which would give 5½ cars per minute.

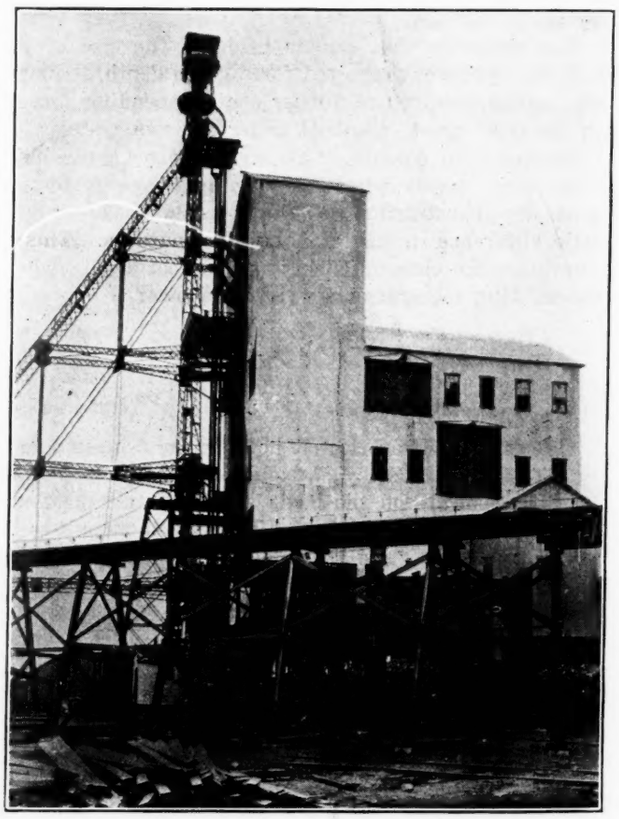
By using four-ton cars the capacity would be 22 tons per minute, or 1320 tons per hour, or 10,560 tons per day of eight hours. This test was made when the plant had been operating only a few weeks, before the "new" had worn off, and before the men were thoroughly familiar with the operation, but it gives a good idea of capacity.

Another recent installation at the two mines of the Columbus Mining Co., near Hazard, Ky., where the dumps were placed at the tram tracks of drift tipples, verified the tests made at the Granville and Zeigler collieries, so it is safe to say that the dumping part of the skip hoisting problem has been solved.

Placing the loaded cars in the dump is a rather simple matter. They are handled on the mine bottom practically the same as if cages were used, excepting that two, or if desired three, cars at a time are caged instead of one, and the horns of the caging machines are spaced accordingly.

It was found by using swivel hitchings and spacing the track horns properly, that it was not necessary to uncouple the trip when passing the cars through the dump, and the Granville and Hazard mines are so equipped—trips of 25 and 30 cars passing over the scale, through the blocks and dump and out to the empty track—one spragger and one man at the dump handling the entire trip.

In the tipple the coal flows out of the skip as it turns over through the long radius curves and slides



TIPPLE AT ZEIGLER MINE

down a chute to a slow-moving apron feeder, where it is discharged at a uniform rate on the screens. Every effort has been made to avoid all drop or fall to the coal, the only real drop being from the chute into the skip, all other coal movement being slide rather than drop. The fall of the coal from chute to skip compares with the throwing of the coal from the pit car to the weigh basket in the cage system, and it is confidently expected that the total breakage under the new system will be no more than with a cage.

There is another great advantage to the skip hoist that becomes apparent after the system has been in service, and that is the solid-end pit car. Doors on mine cars are a source of continual maintenance expense, they are difficult to keep in good order and there is quite a saving in first cost of cars when doors are eliminated. The solid-end car also makes for cleaner

roads, as most of the coal dust on haulage roads is from leaks between car bottom or sides and the door; the solid car can be built practically dustproof, the only spill being lumps brushed or bumped off the top, and these are comparatively easy to handle.

No data are submitted on comparative first costs of the two systems because none of the installations now under way have been completed, but as near as can be determined from costs to date there will be little saving in first cost of the skip method as against the cage. The cost of the dump itself is probably balanced in saving on pit-car construction, but skips cost more than cages at present prices of plate and the construction of the chutes from dump to skip, with the additional shaft depth required, increases cost of skip installation.

In the tipple structure it is not necessary to build the weigh-house, or that section of the structure carrying the scales, since the coal is all weighed on the bottom before dumping. There is a real saving effected here—probably enough to balance the cost of the extra sump and flow chutes.

The Allen & Garcia Co. is engineering four new skip-installation jobs: The Toluca Coal Co. mine at Toluca, Ill.; the Kathleen mine near Duquoin, Ill., for the Union Colliery Co.; the Valier mine, north of Christopher, Ill., for the Chicago, Burlington & Quincy R.R., and the new mine of the Buckeye Coal Co., at Nemacolin, Penn. At each of these mines, excepting Toluca, the refuse rock, men and material will be handled via a separate compartment at the air shaft; but at Toluca the skip is equipped with an adjustable platform for raising and lowering men. The rock is to be handled in the skips just the same as coal, but diverted by a flop gate in the dump chute in the tipple to the rock bin.

The separate man and material hoist is practically a necessity at large-tonnage mines and is an asset to almost any mine. At the Kathleen and Valier mines practically all the buildings are located with reference to the air and escape shafts, and the only building at the main shaft is the small structure housing the hoisting engines. It is expected to have three shifts of engineers at the man and material hoist and only one at the main engine, since this latter equipment will be in service only during the eight-hour shift when hoisting coal.

For small mines, skip hoisting has the same attractive features as for large producers, where it is or soon will be a necessity, and there are numerous advantages not referred to herein, due to the elimination of the self-dumping cage and open end pit car.

The advocates of skip hoisting at coal mines probably have rough sledding ahead, as the coal man is conservative, to say the least, and skeptical about radical changes in established conditions or customs. Nevertheless, it seems wise that the question be given serious study and consideration. In the last year some of the most competent and thoughtful men in the coal-mining industry have become converts to skip hoisting, and some of them are spending large sums of their own money to demonstrate the courage of their convictions. Let us wish them complete success. If we can help in any way to better the conditions of the industry, make mining safer, or improve our methods, it is not only our duty to do so, but our pleasure as well.

Certificate of Merit for Coal Meter

The Franklin Institute has recently awarded its Certificate of Merit to Oliver D. Havard, of Allentown, Penn., for the Havard coal meter. This is a device which is fixed in the feeding pipe to a furnace, for the purpose of measuring the coal used. The coal is usually crushed to a certain degree of fineness and, in passing through the pipe, rotates a vane connected with a recording device, which is so calibrated that the rotations of the index will indicate the amount of coal passing through the pipe. This is of especial value in connection with automatic devices for feeding furnaces.

April Production in British Columbia

A statement of tonnage of coal mined by the various British Columbia collieries for the month of April, 1918, issued by the Department of Mines, gives a total of 224,992 tons. The tonnages from the different districts follow:

	Tons
Vancouver Island	148,098
Crows Nest Pass	62,641
Nicola-Princeton	14,253
Total	224,992

The total tonnage produced in the Province for the first four months of this year is 898,036 tons. For the same period in 1917 there were 820,864 tons produced, making an increase for the same period this year of 77,272 tons. Coal produced in the coal mines of British Columbia for April follows:

Company	Production, Tons
Crow's Nest Pass Coal Co., Coal Creek	37,975
Crow's Nest Pass Coal Co., Michel, B. C.	17,280
Corbin Coal and Coke Co., Corbin	7,386
Middlesboro Collieries, Ltd., Merritt	8,939
Fleming Coal Co., Merritt	2,806
Princeton Coal and Land Co., Princeton	2,508
Canadian Western Fuel Co., Nanaimo, B. C.	66,025
Canadian Collieries (D), Ltd., Cumberland, B. C.	50,531
Canadian Collieries (D), Ltd., Extension, B. C.	19,971
Pacific Coast Coal Mines, Ltd., South Wellington	9,325
Nanoose Collieries Co., Nanoose Bay, B. C.	2,246
Total production	224,992

It is thus shown that the production continues to climb, and the indications are that it will go much higher before the end of the year. The Granby Consolidated Mining and Smelting Co., having opened up a 14-ft. seam on one of the three slopes being driven on its coal land holdings on Vancouver Island, may be expected to bring to the surface at least 500 tons a day before long. The new No. 5 Mines of the Canadian Collieries (D), Ltd., at South Wellington, which is producing between 20 and 30 tons a day on development, will run between 500 and 600 tons per diem before the end of the year. Incidentally, it may be said that the company is installing a complete plant at this mine. The tipple arrangements now are being completed, screening equipment prepared and yards laid out. The Morden mine of the Pacific Coast Collieries, which was in barren ground recently, has struck an 11-ft. seam and will be doing better from this time forward, while the Harewood Mine, of the Canadian Western Fuel Co., Nanaimo, B. C., is proving one of the most remarkable single mines of the Island. After being abandoned it was reopened last fall, and during the month of April produced at the rate of about 800 tons a day.

Join the army behind the Army—be a war saver.

Blower Fans in Gangway Driving

By WILBUR L. CROSS
Ashland, Penn.

SYNOPSIS—*In certain portions of the anthracite field the use of small blower fans and wooden pipe for the conveyance of air to the face shows many advantages over other methods of driving-gangway ventilation. Supplanting a fanboy with a motor pays for itself in about two months.*

IN THE southern anthracite field where, because of the steep pitching and small beds, penetration of old workings and the frequent impossibility of having other than small airways near some of the working faces the question of auxiliary ventilation becomes a serious problem, every effort has to be made to solve the numerous difficulties presented by different phases of the work. One of these, the ventilation of driving gangways, offers a problem which hitherto has not been satisfactorily solved.

Some of the methods most commonly used to ventilate the driving gangways may be briefly described as follows:

1. By Means of a Door in the Gangway. A temporary door is built in the gangway just outside of the last chute. From this a square wooden box or pipe is extended nearly to the face. This carries the air to the face being driven ahead of the last chute. Under this system the door and the pipe must be moved ahead as the gangway is extended. This is a slow and expensive process especially if a tight door is made.

2. By Means of a Hand Fan Turned by a Fanboy. Under this system a small hand fan is installed connected to a wooden pipe made of 1 x 12-in. plank. A boy by turning the fan by hand keeps the gas away from the face of the gangway and chutes. It is at best a poor method for the force of air is not sufficient to secure good ventilation nor is it possible now to get boys to stay on the job.

3. By Means of a Power-Driven Blower Fan. This system is a development of the fan and fanboy method. The fan most commonly used is a high-speed blower-type fan 12 in. in diameter, direct-connected to a ¼ hp. compound-wound motor, speed 1700 r.p.m. The motor is connected by No. 14 weatherproof copper wire to the nearest trolley feeder and protected by the ordinary type of entrance switch equipped with plug fuses.

The fan is situated outside of the last chute so that fresh air entering the gangway comes to the fan. The air is carried to the face of the gangway and chutes through a 6-in. inside diameter wood pipe. This is the ordinary wood pipe used for water supply. A strong pipe is needed for this service, one which will withstand hard knocks, rough handling, small coal and rock falls from the chutes and cars and pieces blown from the face.

In some places sheet steel or canvas pipe may be used to advantage, but for all-around use in the gangways driven in the steep pitching beds the wood pipe on account of its ability to withstand rough handling and hard service has been found to give the best satisfaction. Wood pipe as ordered from the factory will have mortise and tenon joints. It is well to order the pipe mortised for 6-in. wrought-iron pipe and to cut nipples from scrap pipe which will be found around any colliery for making the joints. The reason for this is that the wooden tenon will not stand up under any but the most careful handling, and if broken renders the pipe practically useless. The fan and pipe must of course be moved ahead as the gangway is driven forward. This is a small job which may be performed by the gangway man in an hour on company time or can be done by the repairman.

The following equipment at the prices noted will be all that will be needed for one gangway: One fan and motor complete, $60; 100 ft. of wood pipe at 34c., $34; one wooden tee, $2.50; one wooden 45-deg. elbow, $2.50; one entrance switch and wire, $5—a total of $104.

The equipment costs about what a fanboy would be paid in two months. In other words, at the end of two months the saving in the fanboy's wages will have paid for the equipment. With ordinary care there need be no repairs for five or six months other than the replacement of the brushes. However, due to various causes both avoidable and unavoidable, armatures and field coils will be burned out. A charge of $4 per month for armatures, coils, broken brush springs, fan-blades, etc., will come close to the average if 10 or 15 fans are in service and care is taken to prevent the avoidable causes of burnouts, which will be enumerated later.

The life of the wood pipe with ordinary wear and tear will be at least six years. The motor and fan if kept in repair will also last the same length of time. The accompanying table may accordingly be made up to show the monthly cost of one fan. No charge for labor is included as it is assumed that there is an electrician already in the employ of the company. This man can take care of the few fans needed at the colliery and still keep up the other equipment. From one point of view this is not an accurate way of figuring costs. It is accurate, however, in that it shows what the extra monthly cost of installing these fans would be over and above the cost previous to their installation.

Depreciation of equipment, 1/72 of $104	$1.45
Repairs	4.00
Interest on investment	.52
Power cost, 1,500 watt-hr. per day—25 days per month, at 2c. per kw.-hr.	.75
Total	$6.72

For a total cost, then, of $6.72 per month the driving gangways are kept free from gas and the smoke quickly cleared away after a shot. The cost is so small when the great advantages of the installation are taken into account that it can almost be ignored.

To keep the repair costs down to normal and, what is of more importance than cost, to keep the fans always in working order the avoidable causes of burnouts must be known and remedied. Most of the avoidable troubles experienced are due to one or more of the three following conditions:

1. *Ill Treatment or Neglect.* Bearings not oiled or not replaced until they are worn so that the armature rubs the pole pieces. Fuses are blown out and are re-

placed with copper wire. Brushes are not cared for or the commutator is allowed to get dirty.

Miners Attempting To Do Electrical Work. An instance may be cited of a miner who saw a slight sparking at the brushes and poured water on the commutator to "put out the fire." "Me see him little fire, putten on for water. Zip! Big fireworks. Motor she no go."

2. *Dust Collections.* By far the greatest number of burnouts may be traced to an accumulation of dust in the motor. It is almost impossible to completely protect the motor so that dust will not get into it. This dust, if allowed to accumulate, will absorb surplus oil, ignite from sparks from the commutator and burn the insulation from the coils with disastrous results. If the electrician's assistant, whose duty it is to keep these fan motors in order, carries with him a small hand bellows he can keep the dust from accumulating by blowing it out every time he inspects and oils the motors. This little precaution will prevent about 90 per cent. of the burnouts which would otherwise occur.

3. *Poor Voltage.* In some of the sections of the anthracite collieries the trolley feeders are not large enough to carry the necessary amount of current when the locomotives have a hard pull. The locomotive motors are built to withstand a wide range of voltage, but the small fan motors are not. Consequently, the fan motor should be connected to a feeder where the voltage will be fairly constant, otherwise the excess current due to variation in voltage and consequent loss of speed in the fan will quickly break down the insulation and result in burnt-out armatures.

I have specified in this article and given reasons why wood pipe should be used instead of the other classes of pipe which might be employed. It must not be supposed that I am condemning the use of the canvas pipe which has been widely used in the anthracite as well as the bituminous regions, and in tunnel driving. For the special class of work that I have described and for the reasons given I advocate the use of the wood pipe in the manner set forth above. In work where there is little danger of falls and the pipe can be suspended, the canvas tube will be found to be easier to install and more convenient in every way.

Minecdotes

In Which Poor Judgment Is Shown

Recently a serious accident was avoided at a certain colliery through sheer good luck. It was on one of the numerous holidays observed by foreign-born miners, and some of the men did not report for work. However, the mine was operated for a few hours regardless of the absentees.

When the mine foreman learned of the absence of a certain motorman who usually operated one of the gathering locomotives he promptly lost his good nature —provided he ever had any of the genuine article. After relieving his emotions somewhat through the medium of profanity, he instructed a young fellow who was standing nearby awaiting his day's orders to take charge of and operate the locomotive.

Now, this young fellow knew as much about the proper operation of an electric locomotive as does the average bull terrier about aëronautics. This he tried to explain to the irate foreman. But the latter thought the lad was lying. He considered that the young fellow ought, as a matter of course, to know something, at least, about handling a mine motor. The foreman considered the man's protestations of ignorance a subterfuge whereby he hoped to secure a job more to his liking. He therefore cut the young fellow short with the words: "You will either run that motor or go home. There will be no more sneaking out of jobs that you do not like around here." The lad accordingly promised to do his best.

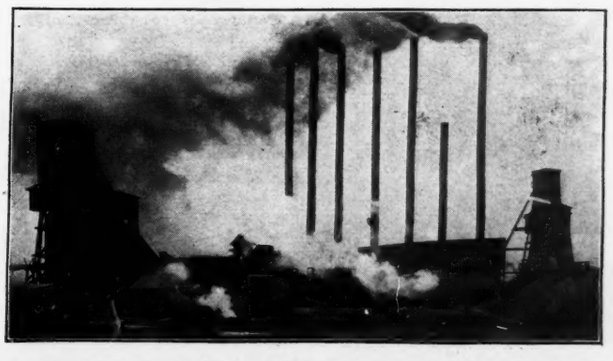
As has been stated, this motorman *pro tem.* knew next to nothing of mine motors and the ways thereof. When he reached the lift where the locomotive was, being ignorant of the fact that the current-switch had to be closed in order to put "juice" in the trolley wire, he took off his coat and stowed it and his dinner bucket carefully away on the locomotive. He instructed the brakeman (who knew no more about the machine than he did) to go ahead and place all the switches for a straight road.

The young man then took his place and started to open the controller. The motor, however, refused to "mote," no matter how far over he threw the lever. Recalling the brakeman, he asked him if he knew what was wrong. But the latter was as much in the dark as the motorman appointee. They were stuck.

Finally, after exhausting their combined electrical knowledge, they started for the telephone to summon the boss, much though they disliked to do so. About 100 ft. from the locomotive they came upon the open switch that caused their difficulties. They threw it to see if anything would happen—and things happened in a hurry.

The controller had been left in the "full on" position, and in the course of the motor's wild flight along the track it tore down seven doors and finally pulverized a car against the face of the gangway where the gangway miner and his laborer would have been had they not been celebrating.

The rest of the miners on that gangway had to go home on account of deranged ventilation. The motorman *pro tem.* was discharged. He now knows more about switches, motors, controllers, and a few other things, than he did before. The boss—well, perhaps he also is somewhat wiser.

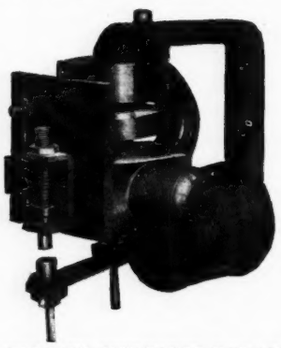


POWER HOUSE AND TIPPLE AT THE WABASH MINE OF THE WESTERN COAL AND MINING CO.

NEW APPARATUS AND EQUIPMENT

Reverse-Current Relays

A new form of reverse-current relay has been developed and placed on the market by the Automatic Reclosing Circuit Breaker Co. These relays are of the circuit-opening type and are so designed that they will open either upon reversal of current or with zero current at abnormally low voltage. The relay is closed and held closed by a shunt polarizing coil. A high resistance is connected in series with this coil. To close the relay a push-button switch is provided which temporarily short-circuits the high resistance. This high resistance limits the current in the shunt winding to just sufficient value to hold the relay closed. A reversal of current or failure of voltage will thus cause the relay to open.

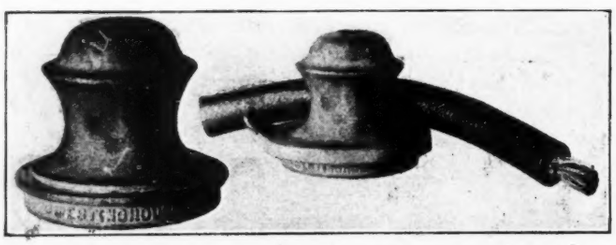


REVERSE-CURRENT RELAY
400 to 800 ampere size

These relays are designed for mounting on the rear of a circuit-breaker panel. The 1200- and 2000-amp. size has a magnetic yoke which surrounds the upper stud of the breaker. The 400- to 800-amp. size relay is provided with a series winding the terminal of which is connected directly to the upper stud on the rear of the panel.

Armored Corner Insulator for Feeder Cables

A new Pittsburgh-type of corner insulator, for securely holding feeder cables on curves, is being marketed by the Westinghouse Electric and Manufacturing Co. This corner insulator is provided with a special collar, or retaining ring, for use where the curve is slight and the cable likely to slip off an ordinary insulator. The collar has an extended lip which curves up around the cable and keeps it in the groove regardless of the angle at which the cable turns. This eliminates the necessity for tie wires and saves time in erection.



CORNER INSULATOR FOR USE ON CURVES

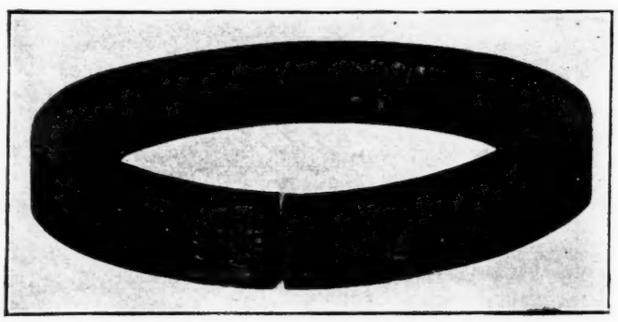
The collar is free to move on the insulator cap, so that after the insulator is screwed to the pin the collar may be turned until the cable seat is in the position best suited to support the cable. For sharp curves the insulator can be used without this collar, as the deep side groove holds the cable firmly in position.

These insulators are made of molded insulation surrounded by a sherardized malleable-iron cap. They are made with a 1-in. pinhole and are furnished in two sizes for feeders of 500,000 and 1,000,000 circular mils respectively.

The Development of "John Crane" Packing

Seldom has an engineering invention or discovery attracted so much attention and created so much interest among operating engineers as has the well-known "John Crane" flexible metallic packing. This packing was invented by an operating engineer named John Crane in the early spring of 1912. Mr. Crane then had charge of a large power plant and was directly responsible for maintenance and repair costs.

His first object was to develop a permanent packing. From actual experience he knew that soft packings ordinarily lasted only a few months, their life depending upon the condition of the plungers or piston rods. Of course, he desired to reduce the bills and if possible to make his packing permanent. He noticed that where metal and fabric were combined in packings the life of such packing was lengthened; also that metals were not affected by heat or water, while the soft packings were. The metal not only lengthened the life of the packing, but it seemed to polish the plunger. Hence the idea came to him of an all-metallic packing.



"JOHN CRANE" COMPRESSIBLE PACKING

After much thought and experimentation, John Crane evolved the idea of taking long, thin continuous strips of metal foil and wrapping this spirally round and round, treating each sheet with a layer of lubricant to permit the sheets to slide on each other and to allow bending about the smallest diameter, also giving the product a compressibility sufficient to compensate for wear and sufficient to control any ordinary pressure. These spirally wrapped sheets, he found, formed perfect barriers against high pressure and made a strong, durable construction.

Mr. Crane had packed many stuffing boxes and knew that a packing to be a success must be simple to instal,

one that could be placed in the same stuffing boxes as soft packings and with equal ease. He therefore used soft metal which could be cut with a knife, took any form or shape under pressure of the gland and bent about the plunger easily.

Reduction of rod friction and elimination of wear were also carefully borne in mind when this packing was developed. That is why the inventor selected an anti-friction metallic-sheet combination containing a babbitt alloy. A mechanical combination of these babbitt sheets spirally wound with lubricant between each sheet naturally was successful in greatly reducing the wear on the rod. To date this saving in wear has amounted to many thousands of dollars that would otherwise have been spent for repairs, replacements and labor charges. It does not require an expert to prove that long-lived packing is highly desirable from the investor's standpoint.

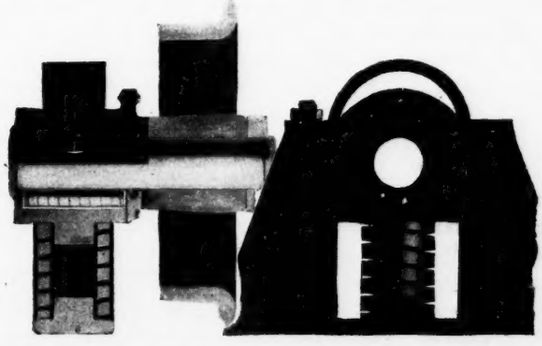
"John Crane" products are now made up in many forms of die-pressed, hand-pressed, straight lengths, rings, coil form and spiralled from 1/32 to 2 in. thick, suitable for steam, air, ammonia, hot or cold water, high, low or hydraulic pressure, oil and acid service. The "John Crane" line has been steadily developed and today any combination of metal alloys for special services can be secured, either in the form of a packing or in a gasket.

As shown in the accompanying illustration, this packing is merely smooth babbitt sheets, thoroughly lubricated, wrapped spirally, forming an all-metallic, flexible, compressible, simple and lasting product for the purpose intended. Rings are generally preferred for large plungers, whereas coils are used in smaller work as in valves, traps and small steam rods.

Improvement in Roller Bearing Journal Boxes

The coal-mining industry has not had a marked change in the method of applying roller bearings to mine cars for a long time. The usual method of application is to install the anti-friction bearings in the hubs of the wheels.

The Fleming self-aligning journal box equipped with



FLEMING JOURNAL BOX WITH HYATT ROLLER BEARINGS.

Hyatt roller bearings, as shown in the accompanying illustration, is a distinct departure from the old method, in that it presents several novel features for the application of this type of bearings to mine cars, especially those carrying from three to five tons of coal. They are furnished with heat-treated axles. This secures a durable equipment, since such axles wear for a long term of years and the danger of their being bent or broken is almost entirely eliminated. Heat-treated axles are coming more and more into use on mine cars and the day is approaching when every modern mine car will operate upon such axles.

The illustration shows a box of the type used with inside wheels, but the boxes are also furnished for use with outside wheels, the fundamental principles remaining the same, a slight change being made in the end plates. These boxes are manufactured by the J. R. Fleming & Son Co., Inc., of Scranton, Penn., and can be applied to both anthracite and bituminous mine cars.

Legal Department

Liability of Mine Operators

By Chesla C. Sherlock,
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The liability of mine operators for the acts of fellow servants has called for no small degree of consideration from the courts. Under the common law, the master was not liable for the negligent acts of a fellow servant. This was a defense recognized by the law and one that mine operators were permitted to use whenever the opportunity presented itself.

The time came, however, when the public saw that the ordinary defenses allowed employers under the common law were not only sadly out of date, but wholly inadequate and unjust to the workmen. Several of the states, moved by this growing popular feeling, passed the so-called mining acts which either abrogated, or modified to a considerable extent, the common law defenses of the employers.

These acts generally provide that mine operators shall not be relieved from liability for injury to a workman on the ground that he was injured by the negligence of a fellow servant. Naturally, the question has come up, What is mining and when will the acts apply?

In a Missouri case, it appeared that the injured workman had been engaged to sink a shaft for the discovery of coal. In the course of his employment he received an injury and brought suit, the employer defending on the ground that his injury was due to the negligence of a fellow servant, and that exploring for coal was not "mining" within the meaning of the Missouri statute.

The court went into the question very thoroughly, but held that "persons employed to sink a prospect hole for the discovery of coal are not within a statute rendering the owners or operators of mines producing coal or other valuable minerals liable for injuries to their employees caused by the negligence of fellow servants."

The Oklahoma constitution expressly abrogates the fellow servant rule in that state in respect to certain specified employments, which includes that of mining operations.

The courts were called upon to determine whether or not drilling a well to search for oil or gas was a mining operation.

A case came up where it appeared that a drill was being operated by two men, one of whom was known as a driller and the other as a tool dresser, the drill being run by an engine. Plaintiff, the tool dresser, while operating the engine, raised the stem into the derrick preparatory to taking it down, a rope having been tied around it by the driller before it was raised, and finding he had not raised the stem high enough to clear the girder, plaintiff went up into the derrick, when the driller called to him to take it out under the girder. Plaintiff then walked out on a walking beam where he could not support himself against the timbers of the derrick, and as he pulled down and outward on the rope, it came untied, and he lost his balance, fell to the ground and was injured. The negligence alleged was that of the driller in tying the rope so that it could come untied. The defense was that plaintiff and driller were fellow servants and defendants were not liable. The plaintiff then claimed that the work he was doing was mining and that the fellow servant rule was abrogated in such work.

However, the court held that "drilling a well in search of oil or gas is not mining within the meaning of the constitution," and that the common law rule of fellow servant governed the case.

The Missouri statute, passed in 1909, reads as follows: "Every person, company or corporation operating a mine or mines in this state producing lead, zinc, coal or other valuable minerals, shall be liable for all damages sustained by any agent or servant thereof while engaged in operating such mine or mines, by reason of the negligence of any other agent or servant thereof: Provided, that it may be shown in defense that the person injured was guilty of negligence contributing as a proximate cause to produce the injury."

In a Missouri case, it appeared that the plaintiff was a driver in a coal mine operated by the defendant. On the occasion of his injury, he had taken empty cars to the end of the track and piled them up on the sides of the track to make way for a loaded train he had to get out. Another driver came along and piled more cars up, but left one in such a way as to project over the track. The plaintiff ran into the obstruction, being unable to see it in the dim light, and crushed his right leg and foot.

The court held that the defendant was liable under the above section of the statute and affirmed the judgment in favor of the plaintiff.

The courts of Missouri have further said that a master is liable to a servant for the negligence of a fellow servant, under the Missouri statute, without any exception save that of contributory negligence.

Under the Montana statute, a mine owner is liable for any damage sustained by an employee, without any fault on the latter's part, where such damage is caused by the negligence of a fellow servant.

In a Montana case, it appeared that plaintiff's intestate was foreman in defendant's mine and while attempting to get off a hoisting apparatus, a skip, as it was lowered in the shaft, was by reason of the alleged negligence of the hoisting engineer in raising the skip without signal, caught between the skip and shaft timbers and sustained injuries resulting in death. The court did not waste any time in affirming the judgment for the plaintiff, it being plain to all that this case came under the statute.

The Alabama code contains a similar statute and the courts of that state have decided cases similar to the one mentioned above.

In a Michigan case, it appeared that the person operating the mining cage was not employed as an engineer but as a fireman, and that his being in charge of the hoisting engine at the time of the accident was in violation of the Michigan statute, which provides "that only a competent and trustworthy engineer shall be permitted to operate the cages and hoisting devices in all coal mines in this state."

The court would not hear the defendant because he had plainly violated the statute in employing an inexperienced man to operate the hoisting cage, and gave judgment for the plaintiff.

In a Wyoming case, it appeared that the plaintiff's injury was due to the incompetency of the engineer causing the cage to fall to the bottom of the shaft.

The court found that there is no statute in Wyoming defining the relation of fellow servants, and that while statutes have been enacted imposing certain duties upon an employer in specified cases and giving the right of action for damages where an injury has occurred as a result of a willful violation of such duties, they are not applicable to the instant case.

The court did, however, find that there was a statute in Wyoming which prohibited mine operators employing any person as engineer who used intoxicating liquor. It was shown that the engineer in question was a user of such intoxicating liquor, and for that reason the court entered judgment in favor of the plaintiff.

In questions of this nature, the answer is naturally found in the state statutes and in the decision of the various courts construing those statutes.

The courts are quite generally of the opinion, however, that the word "mining" as used in those acts is to be taken in a very strict sense, and not applied to prospecting, exploring or shaft sinking where the purpose is merely to discover minerals.

Use of Tar as a Fuel

Some tests that indicate in a practical manner the value of tar as a fuel have been carried out in England in connection with oil furnaces and burners, the tar being mixed in certain proportions with creosote. Of two tests made, the first employed a half-and-half mixture—that is, tar 50 per cent. and creosote 50 per cent.

In order to make it flow through the pipes, the mixture was heated in an overhead tank to a temperature of about 100 deg. F., and on its way to the burner it passed through a steam-heated chamber, raising it to 150 deg. F. At this temperature it was easily atomized and, it is said, burned satisfactorily at a low air pressure, namely, 15 in. of water gage.

In the second test a larger proportion—namely, 70 per cent.—of tar was employed, with of course 30 per cent. creosote. The conditions were the same and the result was, it is stated, equally satisfactory. The national importance of the use of tar in such a connection at the present time is self-evident.

Give up your luxuries that the Kaiser may be made to give up his ambitions.

Help your Government and yourself at the same time—buy War Savings Stamps.

Coal Distribution Plan Completed

Intrastate coal distribution plans have been completed by the Fuel Administration. The Fuel Administration describes the procedure in this important regard as follows:

The War Industries Board will decide what consumers shall have preference in securing coal; but the United States Fuel Administration has been asked to assist in the compilation of complete preference lists by obtaining reports and recommendations on individual firms from the state and local fuel administrators.

The crux of the new distribution plan lies in the compilation of these preference lists. All consumers of coal, except domestic consumers, will be recorded under the following classifications:

a. Railroads.

b. Army and Navy, together with other departments of the Federal Government.

c. State and county departments and institutions.

d. Public Utilities.

e. Retail Dealers.

f. Manufacturing plants on War Industries Board's preference list.

g. Manufacturing plants not on War Industries Board's preference list.

The first six classes will be given preference in coal shipments in coöperation with the plants of the War Industries Board.

The distribution of coal to consumers in the first two classes will be handled from Washington. Washington will also supervise shipments to a few vitally important plants.

The list of consumers entitled to preference as established by the War Industries Board will be obtained through a questionnaire sent to every manufacturing plant in the country using more than 500 tons of coal annually. This list, when compiled, will be furnished to each Fuel Administration district representative in the producing field which supplies the various states, and with these lists to guide them, together with weekly reports which will be required from each manufacturing plant, the state and local fuel administrators and district representatives will give their particular attention to building up proper stocks of coal at all essential war plants.

In order to control the distribution of coal to domestic consumers and industrial plants by retail dealers, the dealers will be required to make a special report to the state fuel administrators and from these reports deliveries to manufacturing plants not on preference list can be curtailed when necessary.

Under this plan of distribution each consumer should arrange for shipments from the same source of supply as last year, if possible. If diversion of coal for the war program or the zoning system will not permit this, the consumer should make every effort to form new connections, preferably under a contract arrangement, wherever a supply is available, before calling on the state fuel administrators for assistance.

Weekly reports to the state and United States Fuel Administration will show the actual shipments of coal to the various classifications of industries.

The plan is designed to fix definitely the responsibility and authority of the state fuel administrators. It provides for a complete system of reports for interchange of information between consumers of coal, state fuel administrators, district representatives and the United States Fuel Administration.

Complete lists of the preferred industries in every community in every state will be available as soon as the reports are compiled.

Zoning System Working Well

Operation of the zoning system is exceeding the fondest expectations of its creators. That it is an important factor in making possible a better car supply is asserted at the Railroad Administration. One of the most important changes is that now going into effect in the Kanawha region. This coal is being forced eastward, with the exception of that moving under permit. To make up for the westward movement of that coal, Chesapeake & Ohio, Norfolk & Western and Elkhorn coals have been barred from Indiana. This supplies more coal for Ohio, Michigan and the Lakes. Indiana has a surplus production. Indiana screenings for 60 days are to go all over the lower peninsula of Michigan and into Ohio as far east as Columbus. By keeping Indiana screenings out of Chicago a market is made for Illinois screenings, which have been almost a drug on the market.

Weekly Production Statistics

All records in the production of bituminous coal were exceeded when the output of the country's mines reached the unprecedented total of 12,465,000 tons during the week ended June 8. This exceeds by 17.8 per cent. the production during the corresponding week of 1917. The average daily production went well above 2,000,000 tons, which compares with a daily average of 1,791,000 tons during the week ended June 1.

The remarkable performance of the week and telegraphic advices indicating that the pace had been maintained during the week ended June 15, resulted in a more optimistic view of the situation than yet has been taken by Fuel Administration officials.

Anthracite forwardings came back to normal during the week ended June 8, when 40,754 cars were shipped.

Beehive coke production during the week ended June 8 was 638,000 tons, an increase of 4 per cent. over production during the week preceding. Labor continues to be the chief factor limiting the production of beehive

coke. Byproduct coke production for the week ended June 8 was 480,722 tons. This is a slight increase over production during the preceding week. Just at present the most important factor limiting production of by-product coke is repair of plants.

While car shortage continues to be the most important factor limiting the production of bituminous coal, the car supply is being increased rapidly and there is promise that the more important producing regions soon will have close to 100 per cent. car supply. Each week is showing an increase in the extent to which labor shortage is limiting production, and this factor bids fair to become the chief reason in retarding maximum output.

The figures referred to in the foregoing are estimates made by C. E. Lesher, the geologist in charge of coal statistics for the United States Geological Survey.

Domestic Consumers Must Conserve Coal

By seeing to it that coal is not delivered to domestic consumers in a greater quantity than is needed, with careful use, for the winter, the Fuel Administration expects to save for other uses fully 15,000,000 tons of coal. A national work to this end is being set on foot under the direction of T. C. Mahady. The plan has been tried out in Philadelphia during the past six months and is said to be entirely successful. An inspection system is expected to have an important influence in securing compliance by users.

Modifies Freight-Rate Increases

The drastic increase in freight rates made May 25 (General Order 28) is receiving some modification as a result of popular clamor. It was found that some intrastate rates were increased 300 per cent. by the provision made that all intrastate rates be lifted to the same level as the interstate rates prescribed in the order. The rates had thereby a double lift, first to the level of the old interstate rates and then the further 25 per cent. increase that was imposed on the earlier charges. Furthermore, the order changes the regulation in Section 5 entitled "Minimum charges."

"The minimum charge of $15 per car will apply only to line-haul shipments and not to brick, cement, coal, coke, logs, or sand and gravel and stone (broken, crushed or ground) on which the existing rates as increased under Section 2 of the order shall apply."

The Railroad Administration has also postponed until Aug. 1 the requirement that freight transportation shall be settled on a cash basis.

New England To Receive Large Tonnage of Bituminous Coal

New England is to receive 30,000,000 tons of bituminous coal. The Fuel Administration has apportioned this amount to that section after a careful study of its requirements. Steps have been taken to insure the delivery of 60 per cent. of that amount by Oct. 1. As New England forwardings in April and May were below the average which must be maintained, it will be necessary to ship at a higher rate during the next three months. Mines in central Pennsylvania have been ordered to double their New England shippings.

Enforcing Output of Clean Coal

Six mines have been shut down for disregarding the clean coal regulations. Three mines were shut down partially and the operators of 568 mines censured and warned to improved their methods. This report by the Fuel Administration covers the past six weeks during which inspection of output has been in progress. The report shows that 116 mines were preparing their coal properly at the time of the visit of the inspector.

Automobile Industry Receives Drastic Cut in Fuel Supply

Seventy-five per cent. less fuel must be used in the manufacture of pleasure automobiles in the season of 1918-1919 than was used in the fiscal year preceding. This drastic action was taken by Dr. Garfield after he had delayed a decision for some time awaiting action on the part of the War Industries Board as to the amount of steel which could be devoted to pleasure-car industry.

Restricts Industrial Expansion in Certain Area

Further industrial expansion in the East and in New England has been stopped by joint action of the War Industries Board and the Fuel and Railroad Administration. Development has reached the point where it is no longer possible to supply the necessary transportation for fuel, raw materials and the finished products. The order is intended to force new industrial activities in districts where fuel and raw materials can be transported by lines which are less congested. The restricted district consists of New England states; eastern and southern New York; Pennsylvania, as far west as Williamsport and Altoona; all of New Jersey and Delaware and eastern Maryland, not including Baltimore.

Inspire Labor To Do Its Best

Anticipating a more generous supply of coal cars, James B. Neale, head of the production bureau of the Fuel Administration, is planning a nation-wide campaign to speed up production. As labor soon is expected to become the most important factor limiting production, Mr. Neale is directing his principal effort at this time to the task of inspiring labor to do its best. The campaign will begin in central Pennsylvania. Prominent men will have heart-to-heart talks with the workmen at the mines and operators will be urged to do their part in expediting production by providing every facility and convenience which will aid their employees to mine more coal. John P. White, of the Fuel Administration's staff, is among those who will make speechmaking tours to urge the miners to do all in their power to increase production.

H. F. Byrd has reconsidered his action in resigning as fuel administrator for Virginia. This was done at the urgent request of Dr. Garfield after he had received numerous communications from Virginia asking that Mr. Byrd's resignation should not be accepted.

THE LABOR SITUATION

EDITED BY R. DAWSON HALL

General Labor Review

The Railroad Administration has increased its car supply so much that the mines in some new quarters are now put to it to hold up their end. It is necessary, somewhat generally throughout the bituminous regions, as it has been all the time in the anthracite and Alabama fields, to use all manner of persuasion and entreaty to get the men to work steadily and for full working hours. Every effort is being made to reduce absenteeism and to increase the ardor of the men.

The railroads' slow turn of cars has driven away the employees. Irregular work has given the men the holiday feeling. Wages have been raised to meet the impoverishment due to shortened hours of work. Consequently, it is now not necessary for a man to work every day to make a living. The wage was raised with that end in view. Now that there is work for every day and wages are so high that steady work is not imperatively required for the securing of a comfortable living, the high wage works continually against the maintenance of maximum output.

MERE SELF-INTEREST WILL NOT STEADY WORKMEN

There is no reason, however, why a patriotic appeal will not undo all that requires to be undone. The mine worker, like other men, is willing to work hard for his country, even if he will not labor diligently to secure a roll of banknotes. More men than ever are prepared to work overtime and are even willing to overexert themselves to help their boys and their neighbors' boys "at the front."

The union in the Shamokin (Penn.) district is making monthly instead of quarterly inspections of buttons, and it hopes by continuous pressure to keep the bulk of the mine workers in the union without the help of button strikes. When membership dues are paid promptly they do not appear so large as if allowed to run a full quarter.

Central Pennsylvania is working steadily, the necessity for a large tonnage being made plain by a number of speakers. In Ohio a strike of 350 mine workers occurred at the Kirk-Dunn mine in Columbiana County on June 13. The men alleged that the draft board granted deferred classification to three miners and denied that status to others. The strikers allege that those thus "deferred" are "just miners" and are not entitled to be singled out for exemption. The operators are charged with having sought favors for the three men and to have been indifferent as to the desires of the rest. The spirit of patriotism in Ohio does not seem as keen as in the anthracite region, where applications for deferred classification should be presented frequently, but are not.

PROSECUTING ATTORNEY SENDS MEN BACK TO WORK

A strike occurred also at the Pursglove-Maher Coal Co.'s Maher mine at Glencoe, in Belmont County, just west of Bellaire, Ohio, early this month, but the men returned to work on receiving orders from the prosecuting attorney, who notified them that the mining of coal was an essential work and must be pursued without any cessation.

In West Virginia a strike of 250 mine workers took place June 10 at the Bertha mine of the Quality Cement Coal Co., a mine on the Monongahela River in the north of Monongalia County, West Virginia, near the Pennsylvania state line. The men claim the weight of their coal is estimated and not weighed, and that the estimate favors the company. They also say that they desire to organize a union and that the company refuses to recognize the organization. The mine is conveniently situated to Point Marion in Pennsylvania, where "wet goods" are dispensed. The dry law of West Virginia is being strictly enforced, and men who, in visiting that pleasant Pennsylvania village, bring back more good cheer than the law allows are being arrested and jailed. As a result, despite the strike, order was maintained. On the evening of June 11 the mine workers announced that they would return to work, orders to that effect having been received from the union officials at Fairmont.

The operators in the Fairmont region are trying to induce men to mine coal who have never mined it before. A. C. Beeson, of the Four States Coal Co.; A. Lesle White and C. J. Ryan, of Clarksburg; F. J. Patton, of the Central West Virginia Coal Operators' Association; E. Drennan, of Elkins, and C. H. Jenkins and John A. Clark, Jr., of Fairmont, went to Washington last week and had a conference with Cyrus Garnsey, Jr., assistant United States Fuel Administrator. The State Fuel Administrator, J. Walter Barnes, accompanied them. The delegation presented to the Fuel Administration a scheme of awarding buttons to the coal miners who work regularly, the buttons to be a badge of recognition of service rendered.

FAIRMONT REGION NO LONGER A NONUNION CENTER

The union is putting its affairs in order in the Fairmont, W. Va., district, President Frank Keeney of District No. 17 having opened an office in the Deveny building, Fairmont. Frank Keeney is directing operations in Marion, Harrison, Barbour, Lewis, Mineral and Tucker counties. This list of counties varies from that designated by the Fuel Administration as the "Fairmont District." Note that Monongalia county is not included, but the action in the strike of the cement company, just referred to, suggests that Monongalia is in Keeney's jurisdiction. "Mother" Jones also addressed a meeting at Star City, near Morgantown, in Monongalia County, Sunday, June 16, as if she had a wider field of operations than the chief. But then who could put bounds to "Mother" Jones' activities?

Governor Cornwell, of West Virginia, is determined that the vagrancy law shall be closely enforced, especially in Mingo county, where he says in a recent letter to the operators there is an excessive amount of absenteeism, some men being absent from their working places two or three times in a week. In the letter he says:

MINGO, W. VA., MEN MUST WORK MORE REGULARLY

"I am advised that the Mingo County Council of Defense is seeking to diligently enforce the vagrancy act against those who do not work. To supplement the efforts of the Mingo Council I ask you to keep an accurate record of the number of hours worked by the men in your employ during the week, forwarding this record to the State Council of Defense each week and posting a copy of the same at the mine where the men are employed. The vagrancy act is a war measure and must be observed during the war."

The attempt of the West Kentucky Coal Co. to make an ancient injunction serve as against persons for whom it was not specifically written has failed. This injunction, dated 1907, restrained certain union officials and others from interfering with the operation of the mines. Sam Tosh and George Overby, officials of the union in western Kentucky, strove to prevent the mine workers from working for the company, and they were arrested for being in contempt of the instrument quoted. The lower court sustained the company, but the United States Circuit Court of Appeals at Louisville, Ky., reversed the decision of that court, declaring that there was nothing in the record to show that the strike of 1917 was a continuation of the strike of 1907 or that the defendants were engaged in the former strike.

Midway between Murphysboro and Sparta, Illinois, lies the town of Willisville, a Perry county mining town. Some few days ago there was funeral at this village and 100 men

quit work to attend it, but according to the company only 12 of these men were interested enough to actually participate in the ceremony. The company fined the men who did not attend the funeral, but quit work nevertheless, $2.50 apiece for unnecessary idleness. The men continued idle for a few days and then concluded that their idleness was a breach of contract. As a result they returned to work.

Operation of many of the mines in the now thriving Belleville, Ill., district was stopped recently by a strike of the employees of the East St. Louis & Suburban Electric Railway Co. for higher wages, and but for a prompt temporary adjustment of the dispute, subject to final decision by the War Board, there would have been a rather serious interference with production. A number of mines are located on or near the interurban divisions of the system, including the big O'Fallon mines near French Village, and miners of Belleville, O'Fallon, Lebanon and other St. Clair County towns are dependent upon the electric line to take them to and from work.

Drivers for Retailers Also Work Short Week

Trouble is being experienced by the St. Louis coal dealers. The drivers and other helpers are making so much money that dealers are having great difficulty in keeping the men at work. E. J. Wallace, secretary of the Missouri Retail Coal Dealers' Association, has called the situation to the attention of William F. Saunders, secretary of the Missouri Council of Defense, and has asked him to take some remedial action. "The drivers and other helpers," he says in his letter, "are making more money now than ever before and find it convenient to lay off a couple of days a week, leaving equipment idle, cars loaded on track and in a general way bring about demoralization in the retail coal trade."

Secret service men of the Government are investigating the discovery of 21 Mauser rifles in the garret of a coal miner's home at Beckemeyer, Ill. The weapons were seen by a child, playing in the garret, and she told Sheriff Welsh. He seized them and took them to Carlyle and turned them over to the Federal authorities. The miner, who was known as a pro-German, left Beckemeyer five months ago, but his wife is still living in the house and gave up the weapons without question. The miner is said to have been a member of the I. W. W.

There is evidence that the mine workers in some places do not understand how important it is to work whenever the Railroad Administration has been able to leave cars in the mine siding. At the Royal Mine at Swansea, near O'Fallon, Ill., in St. Clair County near St. Louis, William Deppe, a miner, refused to contribute to the Red Cross, and 110 mine workers struck and threatened even to riot.

Strike in Illinois About a Single Dollar

The manager followed Deppe into the mine and talked with him. Upon his advice, Deppe gave the manager a dollar for the Red Cross drive. As Deppe was said to be making $66 every two weeks, his fellow miners could not understand why he could not give a small share of it to that work of mercy. Nevertheless a strike or shutdown in a coal mine is an unpardonable offense against the commonwealth at the present time and it should certainly not be instituted for so small a purpose as to raise a dollar for the Red Cross.

The labor situation in the Southwestern district is the most favorable of any time in years. Miners are working well, and there are no strikes. Practically all the fines accruing against miners because of actions contrary to contract have by this time been paid in. A total of $16,000 in fines had so accrued, and the collection made goes into the treasury of the Southwestern association.

There were three strikes in which the contract had been plainly violated. At the Smith, Scott & White mine, 125 men were idle 49 days. In this case, the miners insisted that two men, who were discharged, be returned to work before the matter of such discharge was arbitrated. At the Packard & McWilliams mine, a smaller number of men were out 38 days, demanding that the firemen be promoted to crane jobs. At the Jackson-Walker mines, 1000 men were out 10 days, in an effort to organize the office clerks. In each case, the strikers finally returned to work, and the matters were taken up under the contract. Pressure was brought upon the leaders by the United States Fuel Administration, and by the miners' national organization. The operators plainly saw that these were cases—taken in combination—which would establish dangerous precedents, if the fines were not collected, and this view was taken by the national officials of the Fuel Administration, the miners' officials admitting the violation of contract. As a result, there is among the miners in general a sounder respect for contracts, as well as a more serious purpose to keep industry going.

The convict miners at the Banner Mine of the Pratt Consolidated Coal Co. mutinied on June 11, holding five white men including two fire bosses as hostages. They demanded that the warden of the penitentiary, J. P. Hall, be discharged. By the good offices of Dr. R. A. Smith, the physician convict inspector, the men were induced to return to discipline without the use of firearms or injury to person or property. The convicts at the Banner mine are men of bad records, and more trouble was, for a while, feared. However, the strike was settled and the mine started again at full swing Thursday, June 13.

The Royal Commission which met May 14 at Sydney to inquire into the wage controversy between the Dominion Steel Co. and its employees has rendered a decision which recommends that the company grant its men an increase totalling over $300,000 a year, the advance to be dated back to May 1. The highest rate of increase goes to the lower-paid men.

Labor Shortage in Anthracite Mines

Apart from the draft, even apart from absenteeism, the labor situation in the anthracite region is desperate. The labor force before the war was not adequate. It has been made less adequate since by the drain to the munition factories and the enlistment and draft. For a while some good results have been obtained by drawing on culm banks and by working the easier-won coal, but these resources are narrowing. It is necessary to do something more to relieve the situation than merely provide for exemption from draft.

In bituminous mines most miners want a working place of their own. However, with a little coaxing, or when men are numerous, you can get them to "double up," especially where cars are delivered at the face. Why then must miners in the anthracite region work in pairs—a miner and a laborer? The answer is that the miner prefers that method because in most cases he gets the laborer to do the work while the miner secures the major part of the pay. Let the miner have a place alone and he will have to do all the work. Of course, he will also get all the pay, but in that event he will have to work harder than he would if he had a laborer. The miners desire to maintain the present condition of things. Some of the miners leave their working places and go home quite early in the day, trusting the faithful mine laborer to go on alone with the work of loading the coal. This practice some companies have been trying to change, contending that the trained miner is paid well to look after the greenhorn laborer and should stay in the place and at least attend to that duty if he does nothing else.

The Hudson Coal Co., at the Coalbrook colliery, Carbondale, Penn., has been endeavoring to induce the men to work alone, one man to a place. As a result the 1300 mine workers struck on June 12, tying up the operations at the colliery. The mine workers have 15 grievances and are willing to arbitrate all but this one. They explain that there are a number of the 1300 striking men who are too old to work a chamber alone, and that is the principal reason for demanding a laborer. If that is an honest reason, it will be quite possible for the company to let these old war horses go on working double and let the younger men work alone. Unfortunately, there is reason to fear that the opposition to the rule "One man, one room" arrangement, so popular in the bituminous region, does not arise from any compassion for the old men but from a desire

on the part of the miner to profit from the lower-paid labor of his assistant.

The following letter from a correspondent in the Southern anthracite field is interesting as throwing light on one of the reasons for the shortage of anthracite coal. It shows, what *Coal Age* has frequently contended, that the mine worker has been allowed to visualize a part of his duty as if it were the whole.

"The newspapers and the coal-trade journals have repeatedly told us that there will be a shortage of anthracite, and that if the present output is all that can be obtained there will be a coal famine in the United States next winter that will make the "heatless Mondays," from which the people suffered last year, seem like a Turkish bath.

Miners Must Help or Homes Will Be Cold

"What such a possibility involves we can realize by recalling the suffering that then existed among the poor people in the cities, the long lines of women and children standing with buckets waiting their turn to buy a bucket of coal to keep up the one little fire in their apartments, the riots that took place in Philadelphia where the police were overpowered, bottoms dropped out of coal cars and contents carried away by men, women and children who needed the fuel to keep their homes from freezing.

"The increased consumption of anthracite has been one of the remarkable features of this demand for fuel, and this feature of it can be traced to the doubling and quadrupling of the number of workmen employed in the munition plants, shipyards and other industries that are busied in producing material of war. Most of these are located on the Atlantic coast and so are dependent upon anthracite for fuel. In addition the cantonments, where the men receive their training, require over two million tons of fuel to render them habitable.

"All the coke that the country can produce is needed to supply blast and other furnaces for the production of iron and other metals. Plants that formerly used coke have had to replace that fuel with broken and egg coal, making a still further demand on the anthracite industry.

"What is being done in the hard-coal region to meet these extraordinary war conditions? The reports of shipments show an increase over last year; but is that increase all that it should be, and are the men in the mines doing their share to produce a maximum output of what has proved to be one of the greatest essentials of the war?

Here There Are More Men and Less Coal

"I have been permitted to look through the records of one of our large anthracite corporations, and I have found that the increase in their tonnage is not coming from the mines but from the washeries. One of these was not running at this time last year and another is now running double-shift in place of single-shift.

"I was allowed to look over the daily report of tonnage for the month of May and found that up to May 27 the collieries had worked practically the same time this year as they did in May last year, but that there were 13,103 less mine cars of fresh-mined coal dumped in the breakers. In looking over the records of six different collieries I found that with the same number of hours worked they dumped 13,513 less mine cars.

"As the average amount of coal obtained per mine car is about 2½ tons, the total loss in tonnage amounts to 32,757 tons. On inquiry as to whether in the opinion of the officials of the company the severe falling off in fresh-mined tonnage was due to the loss of miners going into the United States Government service, I was advised that it was not, as in the month of May this year there were 1785 contract miners on the payrolls of the company as against 1665 in May last year. On further inquiry as to what they thought was the reason, my attention was called to the absentee statement which is made out daily. This showed that from 8 to 15 per cent. of the men are absent from their work each day. The falling off in tonnage just stated is almost in proportion to the average absenteeism from these collieries. Clearly the decrease in tonnage arises from the fact that the miners and other employees are not coming to their work regularly and have failed in their duty.

The miners should realize that we cannot prosecute the war successfully unless we have fuel, and that in providing fuel they are providing the munitions which will enable their boys to protect themselves against the enemy. Without these munitions their sturdy defenders will suffer the same fate as the earlier regiments of English and Canadians, who went unprepared to the front and who came back with only 10 per cent. of their men.

"Attention was also called to the fact that every possible excuse is being made for a holiday and that the men are not working effectively or trying to do their best. There seems to be an impression among the miners that by investing in a Liberty Bond and paying out $5 to $10 a month they are doing their full duty toward winning the war. Money is needed, it is true, to buy fuel and other things, but only when the fuel is produced can the money be used; and without fuel the war will be lost."

The remedying of the draft situation is not proving easy. Apparently the draft boards are not the main cause of the trouble. The general sentiment of the anthracite region is that a man who is called by the draft and seeks exemption is a "slacker." Against that sentiment the draft boards must actively oppose themselves if any success is to be obtained in maintaining a force to man the anthracite mines.

It is not enough to accept without question all bona-fide requests for exemption. Such a passive relation to a desperate condition will not save the anthracite supply. The men conscripted are enterprising, daring and patriotic. They refuse to ask or to accept exemption or deferred classification, and they dread criticism and the innuendo more than they do physical dangers.

Production Scores vs. Baseball Scores

However, the union leaders may be able to bring a new sentiment into being, and to this end President Frank J. Hayes has been addressing mass meetings. The operators might well express their opinions in meetings with their men. Most of the men are disposed to listen with approval to suggestions from that source. Operating officials are apt to underrate their influence with their men. With a good cause a competent speaker, who is not merely a fluent talker, but has the correct point of view, will never fail of receiving a proper reception—provided, of course, that a certain degree of rancor does not exist which has to be allayed before the argument is presented.

In order to increase the output of the miners a competitive plan has been proposed calculated to arouse as much interest in output scores as has hitherto been expended on the purposeless scores of baseball and football matches. Competitions for nation-saving are to be the worthy successors of competitions for less noble ends.

Of course, it would not be fair to pit colliery against colliery, for some are large and some are small. The race would be won before it was started, and such an unfair competition would arouse no interest. It is proposed, however, to make the contest one for average tonnage per capita, and so put all the collieries on a more even basis. A conference was held recently at Wilkes-Barre to put this plan in immediate operation, and prizes will be awarded to that miner and his helper who produces the largest weekly tonnage.

Work One Day a Year for Uncle Sam!

The Rev. Oscar Berkley, a "circuit rider" in northern Kentucky, who preaches part time and mines coal part time for the Gravity Coal Co., is endeavoring to start a general movement looking to the donation of one day's work to the Government by every man in the country each year during the war; and is urging that on the same day every merchant donate his profits for that day to the same Government fund.

Berkley claims that this would not work a hardship on anyone, and would make it possible for the Government to secure much additional revenue and do it without increasing taxation materially. He claims that there are thousands of laboring men who would like to assist the Government, but they cannot afford to buy a Liberty Bond. Berkley has apparently overlooked War Savings Stamps.

EDITORIALS

Why Have Two Tons in America?

NO SYSTEM is more provocative of fraud and profiteering than the use of a double standard of weight —the short and the long ton, both tons being known in usual practice by the shorter appellation "ton," as if there were but one standard of weight.

The public does not know which ton is meant when the word is used, the one with 2000 lb. or the one with 2240. As a result, where coal is sold to the retailer by the long ton he can retail it by the short ton and make 12 per cent. of profit. Most retailers are honest, but the temptation is strong and should be removed.

The old English ton, the long ton, used principally in the old coal fields, did have the advantage of being divided up according to the table of weight—14 lb., one stone; two stone, one quarter; four quarters, one hundredweight, and 20 hundredweight, one ton—but, in America, of these divisions one only remains, and that division is misleading in name, for everyone in this country regards a hundredweight as 100 lb., whereas when it is a long hundredweight it has 112 lb. and not an even 100.

The short ton is making its way even in Pennsylvania, the oldest of coal-producing states. But in that commonwealth a state report is made in which the main tabulations are in short tons and the tabulations of the inspectional districts are in long tons. As a result the figures to the layman appear hopelessly discordant, especially as the reports show the long ton as the "ton," though the short ton is specified as a ton of 2000 pounds.

When the long ton disappears we can avoid the use of the adjectives "long" or "gross" and "short" or "net." The use of the word "short" always suggests fraud, and for that reason should be abandoned in all the states. The words "gross" and "net" suggest a different idea from that which we seek to convey. If we speak of the "gross" tonnage of the anthracite region we should mean the whole tonnage, including what is employed in the raising of the steam for the operation of the mines. The "net" tonnage should be that part of the whole tonnage available for public consumption.

Why Should We Reward It for Its Failure?

REPRESENTATIVE CHARLES B. SMITH of Buffalo recently advocated, unsuccessfully, in a letter to President Wilson, that the Treasury Department be put in charge of the work of the Fuel Administration because of the failure of the latter to supply the needs of industry. His suggestion seems to advocate quite a natural evolution, entirely in accord with what has been going on in the past and with what is only too likely to occur in the future.

For example, the Government, by extremely unfair restriction of the railroad business, prevented the development and maintenance of the railroads. They dwindled under the malignant influences of excessive rate regulation till they fell, like a dried apple from the tree, into the lap of the Treasury Department. Since then Mr. McAdoo has been busy doing all those things which the railroads were forbidden to do. We have hope that he will succeed in his administration because he has been suffered to make all those provisions for successful operation that the Interstate Commerce Commission industriously banned.

But the evil that was done to the railroads before Government ownership lives still, though the railroads are now federally owned and allowed to take money from the public with both hands. Not that they are taking a dollar too much, be it understood, not that their traffic regulations are a bit too rigorous, far from it. But it must be conceded they are more severe by far than they ever were under private ownership. We now know, if we could not see it before, why under such ownership the railroads failed to meet the public demand.

The fuel supply may fail to satisfy needs, just as the railroads failed. The trouble is not that the business of producing fuel is conducted with inadequate skill, or that fuel as a whole cannot be produced in adequate quantity, but that the transportation facilities provided are unequal to the work required of them. The coal can be mined, but cannot be brought to market. As the railroads, ruined by the Government, fell into the hands of the Treasury Department, so now the Fuel Administration, handicapped in its efforts by the inefficiency of the Government railroads, is threatened with absorption by the department which controls the railroads.

The railroads have been wholly to blame for the fuel shortage, mainly by reason of their inadequacy of equipment, but partly because of an attempt made by the Railroad Administration to exploit the coal operators. The railroads promised a full stint of cars to those operators who would sell their output to them at a reduced cost. It is even alleged that the railroads turned over some of the coal thus obtained to certain industries that they favored. As a result many mines worked only fitfully and other mines had an excess of cars. This was a waste of equipment when every car was needed, and this, because a mine with cars left over at the end of a day, or one which does not load its cars early in the day, is wasting car service.

But this was not all. The men working at the mines which run only irregularly became dissatisfied and quit for other work. So when the wrong was adjusted by Mr. McAdoo on his return from his Liberty Loan campaign, the evils which followed in its train were not wholly undone. The irregular work has done much to destroy the morale of the mine workers.

It is well known that men get careless and indifferent when work is not steady. You cannot urge them to do their best, for they naturally counter with the answer: "If they want the coal, why don't they give us the cars? They are always calling on us to get out a big

tonnage, but they don't seem anxious to hold up their end; and what is more, they are not giving us a square turn." Because of the discrimination of the Treasury Department, through its branch, the Railroad Administration, it was hard to keep the men keyed up to their work.

Another way in which the Railroad Administration has hampered the Fuel Administration has been by the inadequate purchase of coal for storage. Of course, the effect of this is local, as in most places the public has been willing and more than willing to take what the railroads would not buy, but in such places as it occurs it is most distressing. The Railroad Administration tried also to get an exemption from the zoning rules. It thought it was justified in going beyond the zones laid out for the public. The transportation lines were prepared to haul the fuel that they preferred for long distances, though other parties had to satisfy themselves with coal such as was mined nearby. In this way the roads failed to make the utmost use of their equipment.

And for these inabilities and offences of the Railroad Administration, there are those people who suggest that the Fuel Administration must pay. It is the old story. The man who fails will suffer, and meantime the man who makes him fail enters into his estate. The Railroad Administration may not be blamed for failing to do the impossible. It must be blamed, however, for some things it has deliberately done to prevent the orderly operation of the mines. But alike where blamable and unblamable, the Railroad Administration's failure to supply cars is the cause of the coal shortage. Shall we therefore reward the Railroad Administration by placing it in control of the production of fuel?

Save That "Shovelful"!

WE ARE told (and have no reason to doubt the truth of the assertion) that the country faces a coal shortage amounting to several millions of tons. This is a time of national necessity, a time when every one is anxious to do "his bit"—and without exception every one's bit is his best. Admonitions to economize in the use of food meet the eye at every turn—in the street car, on railway trains, in every post office, courthouse, public library, town hall and schoolhouse. Even the signs along the highway preach the same gospel.

But if food is important as a national resource, as a war munition, so also is fuel. It is highly probable that fuel to comparatively as great an amount and value as food can be saved through care and diligence. It has been repeatedly pointed out that the householder by saving a shovelful of coal a day can in the aggregate save —that is, release—a vast amount of fuel yearly for the production of much needed munitions. The time has now arrived when all users of coal as well as householders must save fuel, must save that "shovelful" per day.

Fuel can be saved in many plants that are already thought to be fairly economical. Not long ago a certain plant in New England that was engaged in the manufacture of wire sought to improve the efficiency of its already efficient power plant. The wisdom of this attempt was doubted by some as the plant was known to be modern and well kept up. After three months of operation, under the supervision of an expert, the efficiency of the boilers and furnaces had been increased 16 per cent., the losses in flue gases had been cut down 13 per cent. and the loss of unburned fuel through the grates had been reduced 2 per cent. When all of these economies were traced back to the coal pile it was found that the savings effected amounted to 1500 tons of coal yearly, or about 30 per cent. of the former fuel consumption.

All this was accomplished without one cent being spent for changes or alterations. The economies effected were secured through careful and skillful firing, strict attention to details and eternal vigilance. The point of maximum efficiency has not yet been reached in this plant. When this point is attained, however, the task of fuel conservation will have only begun, for maximum efficiency must then be maintained.

The foregoing shows what possibilities exist in some plants that are thought to be already fairly efficient. If similar and equal economies were to be made in other plants throughout the country—and this is entirely possible in a great percentage of them—the saving to the nation and to the cause of democracy and humanity would be immense.

Hounding the Devil

OVERWHELMED by our marines at the recent battle in the vicinity of Chateau-Thierry, France, the gasping Huns summarized what they thought of our boys by the ejaculation *"Teufelhunde"!* To the Prussian mind, filled with the intoxicating fumes of conquest and the immoral creed of the Hohenzollerns, there was something devilish, something unearthly in the grim earnestness and strange intensity that characterized the fighting of our lads in khaki. They could not understand it. "Devil-hounds," they called our boys. But though they coined the epithet they did not realize its real meaning, its full significance.

Our marines—the boys who are always the first ones to fight—know what they are doing, however. They are *hounding the devil.* They are exorcising the evil spirit of Prussianism which has taken root in the hearts of the German people—the spirit which has made a shambles of Europe, the spirit which recognizes no sense of decency, no understanding of what civilization means.

Little wonder that the Germans failed to discern the spiritual flame that fed the enthusiasm of our boys and exalted their fighting. "We're here to avenge the women and children of Belgium," was the unuttered cry as our lads pressed forward. "We're here to demand an accounting for the lives of those who went down with the 'Lusitania.' We're here to back up France, bled white, and to fight shoulder to shoulder with our war-weary English brothers. We're here to see that Freedom once more reigns over the earth."

There will be no compromised peace. The determination which marks the faces of "Our Marines," as shown on the colored supplement to this week's *Coal Age,* is full evidence of that.

Don't wait to be urged to join the War Savings Stamps army. What if our men in the trenches waited to be urged?

DISCUSSION BY READERS

Holding Men in the Mine

Letter No. 1.—A short time ago reference was made in *Coal Age* to the difficulty experienced by many mine foremen in holding their men. Various arguments were advanced as to the cause of this difficulty, and suggestions were made of methods of overcoming the trouble; but it appears to me that these did not emphasize sufficiently the chief cause of men constantly wandering from place to place in search of better conditions.

There is no question but what good living conditions, the social atmosphere and steady work at the mine go far toward satisfying men and holding them in their places. Still, where all of these conditions exist, it is frequently observed that the men are restive and the mine cannot be operated to its full capacity, because of an insufficiency of men. In the common vernacular there is "a screw loose somewhere."

Outside of the conditions just mentioned, there are two prime causes to which our troubles may be attributed. The seam of coal worked may be thin, the coal hard to mine, the roof or floor, or both, soft and troublesome; or there may be much gas or water to contend with in the mine. All of these conditions are such as are beyond the control of the management and for which they are not responsible. There is another potent cause, however, that every wise management will strive to eliminate; that is, the disposition of the foreman toward his men.

A FOREMAN'S CHIEF ASSET.

The chief asset of a mine foreman is his reputation. Upon this will depend his success in holding his men. A foreman's reputation is known far and wide and is the chief factor in drawing or repelling men. His reputation will live and follow him wherever he goes. Important as are the many other requirements of a successful foreman, his reputation for square dealing outdoes them all.

It may be asked, What is meant by "square dealing"? In a nutshell, it is the treatment of everyone alike, having no favorites and making no promises that one cannot certainly fulfill. A foreman will sometimes make a promise to a man in good faith and, later, find that he is unable to fulfill it. While his reasons for not keeping his promise are plausible, they are not satisfying. The man concerned is dissatisfied and, for this reason or some other slight cause, he quits and goes elsewhere. The foreman may be resourceful in explaining his conduct satisfactorily to the management and in leaving no room for argument with his men, but this will not keep them satisfied.

Equally efficient with the foreman who is unable to keep his promises is the man who treats his men in a surly, disagreeable manner, snapping them off with "If you don't like that, you know what you can do," or some similar unkind response, generally accompanied with a few cuss words, by way of emphasis.

The all-round successful foreman is the one who is able to win and hold the respect and confidence of both his men and his employers. To do this, he must be honest and sincere in all that relates to the men and the company. He must, of course, be a practical miner and a good judge of men, as to their character, disposition and capability for performing work.

Thomas, W. Va. W. H. NOONE.

After the War, What?

Letter No. 2—There is no question, in my mind, but that there will be a large business done at the close of the war, as remarked by P. H. Kennedy, *Coal Age*, May 25, p. 979. Whatever is the outcome of the war, there will be a great change in the industry both of this country and of Europe. The work of reconstruction that will then have to be performed in Belgium, France, Italy, Russia, Greece, Turkey and Servia will require a large amount of material and of men.

In the early stages of the war when Germany had to maintain the fight on all sides, she reported from 75,000 to 80,000 men killed or wounded a day; but, 75 per cent. of these were later returned to active service. The same is true, but to a somewhat lesser extent, in respect to the armies of France, Great Britain and Italy. Russia had a large percentage of her men slain and the toll of death has been very heavy, also, on the southeastern fronts, among the Turks of Gallipoli and Bagdad.

There will be no immigration, in this country, for a long time following the close of the war. The men who survive the struggle will be needed at home. Workmen in our own land will demand and receive higher pay than what they are getting today. The end of the war will be their opportunity and they will not be slow to seize it, in an effort to secure their share of the increased business.

The demand for coal will be far greater at the close of the war than it is today, because the United States will have to make good the deficiency in other countries, by the export of much-needed fuel. It is now rumored that Canada will have to burn wood, the coming winter, as what coal she can get will be needed by the railroads.

Another great market for coal will be South America, which has been largely supplied, in former years, by Germany and England. It has been stated that it will require five years to repair the coal shafts of France and put those mines in shape to supply that country with coal, which is quoted there, today, at from $30 to $70 a ton. Italy will need coal much more when the war is over than she did in peace times.

In my opinion, when the war ceases, America will be more than 50 million tons short. In view of these facts, it behooves every man to study and plan labor-

saving devices and schemes, to the end that we may be able to produce more coal at a reduced cost and a minimum loss of life. New mines must be opened in the United States and Canada. In this strife for increased production, however, safety first in operation must be the prime consideration. C. McMANIMAN.

Rawdon, Canada.

Practice in Mines in England

Letter No. 2—The letter of Robert Laverick, *Coal Age*, May 11, p. 889, interested me much, as it recalls some of my experiences in the mines in the North of England. I remember that, not long ago, mention was made of the frequent change in mine officials, and the claim was made that men employed a long time, in the same position, fall into ruts and fail to adopt the best up-to-date methods.

With all due respect to the operators in this country, I often think that the methods they employ in the management and operation of the mine do not compare favorably with mining customs in the counties of Northumberland and Durham, where I formerly worked. I have known men to work in those mines and hold practically the same position all their lives, and their sons have taken their places when they were incapacitated by reason of age.

In my opinion, more attention is given by English operators to the care and comfort of their men than is generally practiced in this country. While sinking a shaft that may take one or two years before the coal is reached, the company builds comfortable houses for its men and these are supplied with all the conveniences of life. It was not uncommon for each house to have a large yard or garden and the miner with a family was often supplied with 1500 cwt. of coal free, every two weeks, if desired. Miners living beyond the 3-mi. limit were obliged to pay 50c. for hauling the coal to their homes. A miner living in another than a company house was allowed 12c. per working day.

Welfare Work Years Ago in England.

Social conditions in a village or camp received special attention. Reading rooms, club houses and a large conference hall are provided, where meetings can be held and the miners' brass band can practice, or first-aid teams receive instruction. A small fee is charged to each man's account for the upkeep of these privileges. The company also furnishes a large field for athletic sports, and contests are held annually. There is also an annual flower show. A man who plays an instrument, a good football player, or ambulance man, is given every encouragement to improve himself. Men who hold deputy or examiner's certificates are certain of employment when the first vacancy occurs.

There is a company doctor who instructs the men in first-aid work and attends their families in case of sickness, for which each miner is taxed 18c. every two weeks. A hospital in the nearest town is supported by the miners contributing 25c. each quarter. An up-to-date rubber-tire ambulance and two first-aid men always convey an injured man from the mine to the hospital.

The ambulance, costing from $300 to $500, is generally supplied by the men, while the horse, driver and stable are provided by the company. British mines pay weekly and the drag system of deducting store accounts and other bills from the men's pay is unknown. A police officer is installed in each village, and any abuse of property must be paid for, or the offender is given 14 days to repair the damage.

A good feature of these mining towns is the coöperative stores run by the miners. The men are given no credit at these stores exceeding the amount of their interest. The store is managed by a committee of miners and the company is not concerned. The store pays a dividend every quarter. No junk is handled, but only the best grade of goods is supplied. The scheme of the coöperative stores frees the company of any suspicion or charge of unfairness in dealing with their men. Such are the practices in the mining towns in the North of England. T. GOLDON.

Clinton, Ind.

Loading and Shipping Clean Coal

Letter No. 10—In connection with the question of producing clean coal, which has been under discussion in *Coal Age*, permit me to describe briefly a practice in France, in 1896, which had for its object the loading of clean coal by the miners. I do not claim that the same practice could be applied now in this country; but it is interesting as showing what care was taken, at that time, to secure the shipment of coal of good quality.

It was my first experience in coal mining, and I was given a job of collecting samples of coal from the cars sent out of the mine and preparing them for analysis. In performing this work, I was stationed at the top-landing of a shaft, having a daily capacity of 1600 tons. The shaft penetrated 16 different seams of coal ranging in thickness from 14 in. up, the average being about 3 ft. Several of the seams worked produced very dirty coal, owing to the presence of partings of gray slate and bituminous shale, varying from a half-inch to several inches in thickness. Other seams produced coal of the best quality.

In the working of the poorer seams, it was necessary to mine the coal in benches, in order to separate the impurities from the good coal. Many of the miners would mix the black partings with the coal they were loading, whenever they thought that the foreman would not be around. This practice, however, was held in check by a fine that was imposed upon a miner when his coal showed an increased percentage of ash above the standard fixed by the mining engineer.

Preparing the Coal in the Breaker

The breaker was divided into two parts, one for the loading of the coal coming from the best seams, while the other received the coal of poorer quality. The cars containing the good coal were conspicuously marked to avoid the mistake of sending them to the wrong side of the breaker. Coal of the poorer quality underwent a process of washing, which was not necessary in the case of the good coal.

The samples collected each day were submitted to a careful analysis to determine the contract price to be paid the miners. These prices were continually changed to conform to the changing quality of the coal. It was

my duty to collect these samples of coal each day, and for that purpose I was given a slip bearing the numbers of certain working places from which samples of coal were wanted that day. I had willow baskets each numbered to correspond to the numbers on the day's slips. As the cars came out of the mine, I was instructed to take a few pounds of coal from each car bearing a number on my slip, and to put it in the basket marked with the same number.

I continued to do this during the entire shift, after which the coal in each sample basket was powdered, ground and divided so as to reduce the size of the sample to about 1 lb. This was placed in a small sack, which was labeled with the name of the seam and the number of the room where the coal was mined. It was my duty to deliver these sacks to an office where they were sealed by another person and sent to the company's laboratories for analysis.

The plan that I have described may seem very elaborate; but, since the miners never knew the day when their numbers would be chosen and samples of their coal taken, it had the effect of making them very much more careful to load only clean coal that would stand the test of the analysis made by the company. It is true that a few miners would run the risk and load some dirty coal at times; but the practice frequently brought them to grief when payday showed deductions made for impure coal. It was only later, when working at the face, that I came to understand the purpose of the sampling of the coal at the top of the shaft.

Peru, Ill. GASTON LIBIEZ.

Interpreting Mining Laws

Letter No. 3—The inquiry of Chas. Martin, *Coal Age*, June 8, p. 1080, springs a live topic in respect to the varied interpretation of our mining laws. Reference was made to this in the discussion of several points of the anthracite law some time since (*Coal Age*, Vol. 12, pp. 294, 463).

The two questions now raised by Mr. Martin relate to ventilation, and it must be admitted that the reading of the Pennsylvania bituminous law lacks clearness in respect to the matters mentioned. When attempting to interpret the meaning of a law, it is necessary to ascertain, if possible, the intention of the law makers, which will generally throw light on the meaning of the words used. It is not always an easy task to do this. Such is particularly the case in respect to mining law, where the law makers have undertaken to frame a law in accordance with the information gleaned of matters regarding which they themselves are wholly ignorant.

Referring to the first question of Mr. Martin, we note that the law specifies clearly the limits of the distances apart of crosscuts in room pillars, but gives only the maximum distance apart of crosscuts in entry pillars. The fact that the law permits crosscuts in entry pillars to be spaced 200 ft. apart, while those in room pillars are limited to 105 ft., has raised the question in some minds as to the reason for this.

A little reflection will enable most mining men of practical experience to realize that there are two conditions affecting the distance apart crosscuts should be made: (1) Driving crosscuts too close together increases the expense for yardage, weakens the pillars, and necessitates the building of more stoppings, requiring extra labor and material and affording greater opportunity for the leakage of air and impairing the efficient ventilation of the mine. (2) Driving crosscuts too far apart increases the danger of the accumulation of gas at the working face and necessitates the erection of long lines of brattice to conduct the air forward.

Keeping these conditions in mind, let us suppose that a pair of headings have been driven, say 75 or 100 ft. beyond the last crosscut, when the increase of gas feeders in the coal makes it advisable to drive another crosscut to keep the face clear of gas. There is nothing in the law to prevent this being done, and the foreman is free to use his own judgment. It is hardly to be supposed that anyone will deny that it is possible, with safety, to drive crosscuts farther apart in headings than in rooms, because the erection of a good brattice will keep the face of a heading clear, which is not always possible in a room.

WHAT IS A "RETURN AIRWAY" IN THE MEANING OF THE BITUMINOUS MINE LAW?

Regarding the second question that Mr. Martin asks, it does not occur to me that there is so much difficulty in interpreting the meaning of the law, which states plainly, in Art. 10, that locked safety lamps must be used where gas is generated in quantities sufficient to be detected by an approved safety lamp.

In my opinion, it will make no difference whether gas is found in the first or the last room on a split of air; but the entire air split must then be worked with safety lamps. It would seem absurd to allow an air current to pass through a gob section and then permit it to ventilate live workings.

My understanding of a return airway is that it refers to a passage conducting the current from the last crosscut inby, back to the main return airway. The wording of the law quoted by Mr. Martin makes it unlawful to use the return air from a section employing from 70 to 90 men, for the ventilation of any other place or places. It must be conducted at once out of the mine.

Perryopolis, Tenn. R. W. LIGHTBURN.

Nature of Mine Explosions

Letter No. 1—I note with some satisfaction that the editorial synopsis to the article entitled "Nature of Mine Explosions," by H. E. Gray, *Coal Age*, May 18, p. 930, speaks of "air waves," "trill of the air," and "detonation" as being phenomena of an explosion in a mine. From the illustrations given as Fig. 1 and Fig. 2 in that article, it would appear that the wave motion produced by a blast was very similar whether the blast was projected into the free atmosphere or into the confined mine air, which I am inclined to think is not the case.

However this may be, I am pleased to note that there are some others who believe in the possibility of detonation taking place in the roadways of a coal mine when an explosion therein has been once initiated. I am a strong believer, myself, in the theory that *detonation* of a modified form takes place in many destructive mine explosions, although the real signifi-

cance of this term is not strictly the same as when it is applied to an explosive fired by a detonating cap.

To my mind, assuming explosive conditions exist in the mine air where a heavy blast is fired, there appears to be no reason why the same vibratory wave set up in the detonator should not be communicated alike to the explosive atmosphere about it, as to the charge of powder in the hole, and thus produce the so-called "trill" terminating in the peak of the vibratory flame.

The Development of a Mine Explosion

Mr. Gray has mentioned the well-known fact, which has been so often observed in the days of the extensive use of black powder for blasting in mines, that a space of 200 ft. or more intervenes between the point where the shot was fired and that where the destructive violence of the blast is first manifest. In this intervening space, little damage appears to have been done. Beyond this space, Mr. Gray states that the mine air trills or explodes, though he does not go on to explain what would be most interesting, the development of the process.

In the hope of provoking some valuable discussion on this point, permit me to restate a theory that I worked out some years ago; namely, that where a blow-out shot occurs, resulting in much of the force of the explosion being exerted on the mine air, a second explosion will result from the ignition of the heated gases and fine dust projected into the air. I claim, further, that it is this second explosion that is responsible for the wrecking of the mine which follows.

One noticeable fact worthy of consideration in this connection is the finding of the men killed by the blast, lying a short distance from the manhole where they had taken refuge when they fired the shot. To my mind, this circumstance proves that they were warned of the danger by the undue force of the exploding charge and had fled but a short distance when they were thrown down and killed by the second explosion, which wrecked the mine.

Incubatory of an Explosion

The notable mine explosions, at Altofts and Blackwell, furnish good illustrations of my claim that the 200 ft., more or less, of space from the point where the shot was fired represents the size of what may be styled the "cartridge" of explosive gases and dust that wrecks the mine. I may be permitted to style this development as the "incubatory" of a coal mine explosion.

Some years ago I observed, at an ironworks, what may serve as a practical demonstration of the explosion of a mixed gas-and-dust cloud, when coming in contact with fresh air or oxygen at a sufficient temperature. I was watching the workmen cleaning the dust out of the flues that carried the gases from the top of the blast furnaces to the boilers. As the dust was scraped from the flues, it fell a distance of 15 ft. carrying with it much of the absorbed flue gases. In falling through the air the dust cloud took fire and passed away in smoke. This was a frequent occurrence at the ironworks.

Although Mr. Gray has not described what he calls the "trill" of the mine air as a *detonating wave*, I believe that such is his meaning and that the two are, in effect, identical; because he says that "the climax is reached by a fine vibratory trill movement, and the real detonation of the mass immediately follows."

Without doubt, it is the earnest desire of each one to do everything possible to prevent the occurrence of mine explosions. But, since these explosions most usually originate in the improper use of explosives, more attention should be given to the charge limit, the use of permissible explosives instead of black powder, and the abolishment of shotfiring by miners or other unauthorized persons. Also, experience has proved that the safest policy is to treat permissible explosives with the same care that is customary in the use of black powder, which is seldom the case.

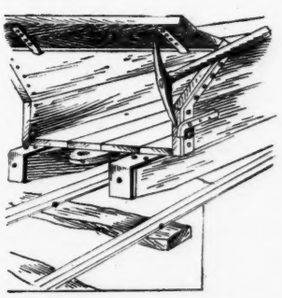
James Ashworth,
Vancouver, B. C., Canada. Mining Engineer.

Mine-Car Door

Letter No. 3—Referring to the inquiry of V. C. Robbins, *Coal Age*, June 1, p. 1031, relative to a suitable mine-car door for use in a 38-in. seam of coal, I assume that the car is so nearly the height of the seam that the coal cannot be loaded over the side but must be put into the car at the end. Although I have never seen a car equipped for that purpose, a few suggestions may prove of service.

While it is possible to design a car with the door swung from the bottom so that it can be laid down flat while loading, it does not appear to me that this suggestion of Mr. Robbins is an essential requirement. The usual arrangement is to swing the door from the top of the car and this, to my mind, is less cumbersome and better adapted for use in a shaft equipped with a self-dumping cage. At a mine employing a good blacksmith, it will not be difficult to equip the mine cars in use with doors swung from the tops of the cars.

It is a common practice among miners, when the end gate is swung from the top of the car, to prop up the gate with a pick, in the manner shown in the accompanying sketch. This is done whenever it is necessary to load the coal through the end of the car. The sharp points of the pick are forced into the ends of the boards forming the sides of the car and into the door, the weight of the door holding the pick in place while the loading of the car is in progress. The scheme is a very simple and practical one and is used by miners throughout the country wherever this type of car is employed in low seams.



A MINERS' TRICK

If desired, instead of depending on the use of a pick to support the door, in the manner I have mentioned, some may prefer to equip the door with a short iron rod attached to it by an eye-bolt. The end of the rod must be pointed like the sharp point of a pick, so that when the door is raised the pointed end will rest against the ends of the side boards of the car and be forced into it by the weight of the door, in the same manner as was the pick. If desired, two of these iron rods can be supplied, one on each side to better support the door.

When a car has been nearly loaded and the end gate is dropped into place and fastened it will not be possible to finish the loading, unless the clearance between the top of the car and the roof of the mine is sufficient to permit the coal to be shoveled over the sides of the car, or the end gate is hung lower than the sides for the same purpose. MINER.

Thomas, W. Va.

Transportation of Coal by Canal

Letter No. 3—I have read with interest W. W. Wotherspoon's reply to my recent letter regarding the cost of transportation on the New York Barge Canal, *Coal Age*, June 8, p. 1075, and am pleased to note that he admits that "if the canal system was constructed, owned and operated by a private corporation, undoubtedly, in computing the ton-mile transportation cost, all of the elements mentioned by Mr. Wilkins would be included."

Mr. Wotherspoon then goes on to explain that, under a provision in the constitution of the State of New York, no tolls can be collected on the canal and also that "as to the canals, their mere existence tends to hold in check and maintain a uniformity of rail rates in the territory between Chicago and New York City," and that "but for the existence of the canals, the rail rates between Chicago and New York and the rates made with relation to the Chicago-New York route would be materially higher."

Why Not a Government Railroad Instead of a Canal

The logical conclusion to the last statement would seem to me that, as a purely economic proposition, Mr. Wotherspoon should admit that it would have justified either the National or the New York State Government to build and maintain a railroad, including its terminals, between Buffalo and Albany, instead of the canal; and allow the shipper to own his own locomotives and freight cars, and run them over the government or state owned tracks, free of charge, in order to produce the result that he says the canal can accomplish, namely: "To hold in check and maintain a uniformity of rail rates in the territory between Chicago and New York City."

It would also seem that, as another economic proposition, the United States Government has no more or better ground for improving navigation by building and maintaining locks and dams on inland rivers and charging no tolls to the boat owners; nor the State of New York any greater facilities to build the Barge Canal and operate it free of all tolls, than for the National or State Government to build a railroad as suggested above and bear all the transportation costs, other than the cost of operating the trains.

In connection with the suggestion of the building of a railroad, instead of a canal between Albany and Buffalo, it may be stated that in 1905, the year construction work was started on the canal, Poor's Railroad Manual gives the cost per mile of the New York Central, including equipment, as $240,859, which for 296.52 miles, the distance from Albany to Buffalo, would amount to a total of $71,419,510, and for 438.72 miles, the distance from New York to Buffalo, the amount would be $105,669,660.

Mr. Travis, the New York State Controller, gives the cost of the Barge Canal to date as $233,695,351. It will thus be seen that the canal has already cost over three times what the New York Central Railroad between Albany and Buffalo had cost in 1905, and over twice the cost from New York to Buffalo, including equipment in both cases.

In view of these figures, does it not seem a rather peculiar solution of an economic problem, in order to maintain uniformity of rail rates, to construct a canal that has cost, including equipment, over three times the cost of a parallel railroad, including its equipment, and over twice that of the railroad from New York to Chicago?

The Question of Transportation Cost

Mr. Wotherspoon says in the last paragraph of his letter: "Since it is impossible to reduce to actual figures, the state-wide benefits received from the canal, I am not of the opinion that the construction, maintenance or interest charges should be considered in the computation of ten-mile transportation cost, but the actual boat operating cost alone should form the basis."

If this conclusion is economically sound, may I ask, Why not go a step further and say that in consideration of these state-wide benefits, the state should also own the boats and operate them free of any charges for carrying their freight, as well as to operate the canal and locks free of toll charges?

As an indication of what it has cost the State of New York during the construction of the Barge Canal, over and above the actual construction cost, the following statement by Eugene M. Travis, state controller, is interesting. He said in an article in the *New York Times*, May 12, 1918, "The total contribution to the canal debt sinking fund amounted to $62,896,702.66 from May, 1897, to May 1, 1918," which is a pretty large part of the state taxes to be set aside for the payment of canal bonds, before the canal is actually in operation, and for which the United States Government is going to provide the barges, because private capital has failed to build them.

Difficult to Estimate Cost of Operation

I am glad to note that Mr. Wotherspoon says with regard to the transportation cost per ton-mile on the New York Canal, "There is no accurate basis that could be employed in obtaining such cost. This is because no one has as yet had experience in navigating the new canal. * * * The actual cost may not be correctly ascertained until the transportation business has been developed."

In discussing the proposed Lake Erie and Ohio River Canal before the Engineers' Society of Western Pennsylvania, I said, "It is impossible for anyone to predict, before the canal is in operation, for what part of its round trip a boat will have a load of either coal or ore; or for what part of the trip the boat will have no cargo at all."

These two statements mean that, Mr. Wotherspoon and I agree that any estimates of unit-transportation costs on either the New York Barge Canal or the proposed Lake Erie and Ohio River Canal are at best only wild guesses and based on no reliable data.

Pittsburgh, Penn. W. G. WILKINS.

INQUIRIES OF GENERAL INTEREST

Sealing Off Fire on Intake

Kindly present the following question for discussion, in *Coal Age*, regarding the best method of extinguishing a fire that has gained so much headway on the intake of a pair of entries driven in solid coal, that it is thought best to seal off the fire by building an air-tight stoppings in each entry.

As shown in the accompanying sketch, the fire when discovered was located in the timbers and coal, about 30 or 40 yd. from the face of the intake heading. It may be assumed that both of these headings are generating

SHOWING LOCATION OF FIRE ON HEADING

but a small quantity of gas, so that it has not been necessary to use safety lamps in driving them. The size of the headings is 6 x 10 ft., and a good air current of 30,000 cu.ft. per min. is passing.

I want to ask three questions. Assuming that this fire is to be sealed off by building air-tight stoppings on both the intake and return airways, as stated: (1) How should this work be performed; or, in other words, in what order should the stoppings be built and the entries closed to the passage of air, to insure the greatest safety and avoid the danger of an explosion? (2) What would be the condition of the air on the inby end should the intake stopping be built and closed first? (3) What would be the condition of the air on the intake should the return airway be closed first.

I know that this question of the order of sealing off a mine fire has been frequently discussed in *Coal Age*, but I do not think that a fully satisfactory solution has been offered, and I believe nothing will be lost by a further discussion that may develop good practical ideas. It is not to be supposed that the same order of building the stoppings will apply in every case; but the conditions I have assumed are simple and should admit of but one solution and I hope there will be a good response from our experienced readers. ANCORA.

Edmonton, Alta., Canada.

It is the opinion of *Coal Age* that this correspondent is quite right in asking for a good discussion of the simple case he has assumed, and we agree with him that there is one way that will afford the greatest safety in the performance of the work. As we have frequently expressed our opinion on similar questions before, we leave the discussion of this question wholly to our practical readers, hoping that it may bring out, as our correspondent has stated, some valuable suggestions. It is one of the important questions in coal-mining practice on which opinions have always differed, chiefly because of the unfailing prejudices of mining men.

Auxiliary Power to Drive Fan

We have a 3 x 5-ft. Jeffrey fan, which is running continuously, 24 hr. a day. The fan is driven by a 75-hp. electric motor, running nearly under full load. It has frequently happened that we have been obliged to shut down the mine owing to a temporary failure in the power line. As this means a large loss in output and is extremely annoying, besides increasing the cost of operation, since the overhead charges and other unavoidable expenses continue unabated during the shutdown, it has been decided to install an auxiliary engine that can be used temporarily when the electric power fails.

Three types of engine have been submitted to us for our consideration; namely, engines operated by crude oil, gasoline and kerosene. As we are at a loss to decide which of these types is best adapted to our use and would prove most economical, we shall appreciate the suggestions of *Coal Age* and any of its readers who may have had a similar experience and can advise us as to what is the best means to adopt and where a suitable engine or motor can be secured. The engine must be capable of continuous service during the period when the supply of electrical power is cut off. It is only intended for use during such periods and the service is therefore intermittent, though liable to be required suddenly, at any moment of the day or night. The matter has been of such great importance to us, that I believe the subject is well worthy of discussion and hope to hear of the experiences of others along the same line.

Peoria, Ill. MINING ENGINEER.

The problem presented by this correspondent is a common one in coal-mining practice, and is, as has been stated, well worthy of discussion by those whose experiences have compelled them to adopt suitable remedies to protect themselves against loss arising from the failure of power lines.

In the opinion of *Coal Age*, the gasoline engine is the type of engine best adapted for use under the conditions named. Generally speaking, its construction is simpler and the engine more easily operated, requiring less skill and giving less trouble. All that is necessary is to keep the engine clean and in good condition and maintain a plentiful supply of gasoline ready for instant use when the emergency arises.

There are a number of manufacturers of good gas engines, among which we would recommend the Fairbanks, Morse & Co., Chicago, Ill.; Foss Gas Engine Co., Springfield, Ohio; Bessemer Gas Engine Co., Grove City, Penn. We shall be glad to have the suggestions and experiences of readers, who we hope will discuss the situation broadly as their practice may dictate.

EXAMINATION QUESTIONS

Tennessee Mine Foremen's Examination, 1918

(Selected Questions)

Ques.—How would you proceed with a mine fire in or near a heading, to insure the safety of employees?

Ans.—Without further information in regard to the arrangement of the mine, it is impossible to answer this question except in a general way. It is assumed that men are working in the heading and are in danger of being trapped by the fire. The first duty is to warn and withdraw these men by any way that is practicable. At the same time steps must be taken to get water to the fire. If the fire is on the intake, the men will be quickly warned of their danger by the smoke carried in on the air current, and they must be given every assistance possible to escape by a safe way. At the same time, an effort must be made to prevent the smoke and gases from the fire passing into the heading, if this is possible. The work of fighting the fire must be conducted on the intake side and performed only by experienced men.

Ques.—What is meant by a fault? Describe one you have seen.

Ans.—Correctly speaking, a fault is a dislocation of the strata caused by a slip of the formation along a line of fracture. In coal-mining practice, miners are apt to speak of any interruption in the continuity of a coal seam as a "fault," whether this occurs as a roll, a pinchout, or results from the erosion of a portion of the seam, by some agency, after its formation. Such interruptions in a coal seam are not, however, true faults, as there is no slip, resulting in an upward or downward throw of the strata along a line of fracture. The candidate must describe a fault he has seen, in his own words.

Ques.—An entry is driven S 60° E, while the rooms are driven N 85° E. The width of the rooms being 30 ft., find the distance on the entry, center to center of rooms.

Ans.—The question is incomplete, as the width of the pillar is not given. Assuming a 20-ft. pillar, the width of a room being 30 ft., the total distance between room centers measured across the rooms is 50 ft. In this case, the rooms make an angle with the entry of $180 - (60 + 85) = 35$ deg. The distance between room centers measured on the entry is, therefore, $50 \div \sin 35$ deg. $= 50 \div 0.57358 = 87.17$ ft.

Ques.—Explain the general arrangements of the ventilation of a mine, in the blowing- and exhaust-fan systems, and show how these differ from each other.

Ans.—In the blowing system, the ventilating fan is located at the mouth of the intake opening of the mine. The operation of a centrifugal fan draws the air in at its center and discharges it, at the circumference of the fan wheel, into a spiral casing by which it is conducted through the fan drift to the downcast shaft or intake opening of the mine. The pressure established by the action of the fan forces the air through the mine to the return opening where it is discharged into the atmosphere. In this system the mine is ventilated under a pressure greater than that of the atmosphere.

In the exhaust system of ventilation, the fan is located at the mouth of the return airway. The action of the fan, in this case, is the same as that in the blowing system, the air being drawn in at at its center and expelled at the circumference of the fan wheel. In the exhaust system, however, the fan drift, leading from the mine, is connected with the center openings of the fan and the spiral casing surrounding the fan wheel terminates in a chimney, by which the air is expelled into the atmosphere after passing through the fan.

In the exhaust system, the mine is ventilated under a pressure less than that of the atmosphere and the latter forces the air into and through the mine until it reaches the fan by which it is expelled into the atmosphere. It will be observed that the action of the fan, in both cases, is to create a depression at its center and a compression at its circumference, and the manner of its connection with the mine determines whether the fan is blowing air into or exhausting it from the mine.

Ques.—Give your opinion as to the advantage, if any, of a forcing fan over an exhaust fan, each working under the same conditions.

Ans.—These two types of fans are adapted to different gaseous conditions in the mine. An exhaust fan is generally preferred in the ventilation of a gassy mine, for the reason that this fan is located at the mouth of the return airway and does not interfere with the hoisting arrangements in the downcast shaft.

The haulage road of a gassy mine should be made the main intake airway, in order to avoid the danger of the ignition of the gas by the open lights of the drivers or motormen who cannot use safety lamps to advantage. The use of a force fan in ventilating a gassy mine, where haulage is performed on the intake, would necessitate doors being placed on the haulage road at the shaft bottom, which would impede the work of hauling the coal.

The use of a force or blowing fan is generally preferable in the ventilation of a nongassy mine, where it has been found of advantage to make the main haulage road the return airway of the mine. By doing this, the hoisting shaft becomes the upcast; and, not only is the formation of ice in the shaft, in winter, prevented by the warm return air current, but the dust of the haulage road is carried out of the mine and does not contaminate the intake air.

In blowing, the action of the fan is usually somewhat greater than when exhausting. In the former case, the fan is filled with the generally cooler outside air, which means a greater weight of air in revolution and a greater power developed.

COAL AND COKE NEWS

Harrisburg, Penn.

Despite extra efforts exerted by employers to safeguard employees, there is a steadily increasing number of fatalities in and about the coal mines, industrial plants and on public service lines of the State of Pennsylvania. From Jan. 1 to June 1, 1918, there were a total of 1245 fatal accidents in the three classifications, as against 1115 for the same period in 1917 and 946 in 1916. These were divided as follows: Mines, 461; industrials, 563; public service lines, 132. In 1916 fatalities were reported as follows: Mines, 437; industrials, 386; public service lines 123.

Deaths in and about the coal mines show an increase of 41 over 1917, while in industrials 45 less persons were killed this year than the year previous. Luzerne County leads the state in mine fatalities for the first five months of this year, with 100. Schuylkill and Fayette County are tied with 51, and Lackawanna had forty-six.

The state draft board authorities and officials of the coal companies face a perplexing question regarding the classification of men of draft age employed in and about the coal mines.

Coal companies also are experiencing difficulty in securing supplies. Quotations on mine supplies are next to impossible to get. It is also hard to secure cutting machines and other machinery needed in and about the mines. About the only way operators are able to secure equipment in a reasonable length of time is to obtain a priority order from the Government.

Every prospective purchaser of steam-generating equipment will be required to file with William Potter, Federal fuel administrator for Pennsylvania, a complete description of the machinery, together with the estimated daily fuel consumption, specifying whether anthracite, bituminous or oil will be used. This announcement was made during the week and is effective at once.

The fuel administration will take under consideration the probable effect of the proposed installation on the prosecution of the war and its relation to the available fuel supply. At the same time the estimated efficiency of such plants will be judged by the state advisory engineer before permission is given for installation to proceed.

J. J. Storrow, fuel administrator for New England, according to information reaching here, has won permission from Dr. Garfield to ship to New England 900 cars of bituminous daily from the coal fields of central Pennsylvania. This is a total of 45,000 tons a day, or almost 20 per cent. of the entire production of the soft coal fields in this state. Meanwhile, industries in the munition belt between this city and the Atlantic seaboard are clamoring for coal.

Charleston, W. Va.

The transportation situation in the Kanawha and Coal River districts in so far as it affected the coal industry last week was deplorable. Conditions were almost as bad as two months ago, when a number of mines were forced to shut down because of inadequate loading facilities. In fact, they were so bad last week that on Friday, for example, 33 mines were shut down, 20 of the mines unable to operate being the mines of the Cabin Creek Consolidated Collieries Co. The other mines were those of the Winifrede Coal Co., Carbon Fuel Co., Spruce River Coal Co., Ivy Branch Coal Co. and the East Bank Coal Co.

At a conservative estimate 80 per cent. of the mines were closed down last Friday, as well as on other days of the week, owing to an insufficient car supply throwing two or three thousand men out of work. Even at the beginning of last week conditions so clearly indicated what might be expected during the remainder of the week that Secretary Toomb, of the Kanawha Coal Shippers Association, sent a telegram to both Director Garfield and Director McAdoo in which he said: "Shortage last month from connecting railroads 2993 cars; shortage this month to date, 2174 cars, or 108,200 tons of equipment. Operators cannot hold men at this rate. Only 40 per cent, supply this month in Kanawha district, served by Chesapeake and Ohio Ry."

The Fuel Administration at Washington replied that the situation had been taken up vigorously with the Railroad Administration at Washington, but up to the end of the week, as already indicated, no relief from the shortage was given.

Discouraging conditions are also reflected in the production figures for the Kanawha district for the week ending June 8, only 144,646 tons being produced in that period. The total hours lost during the same period on account of car shortage was 2094, and because of labor shortage only 191, 2598 hours in all being lost. The labor situation in this district and in other districts of the state has been bad enough, but the absence of cars has made it infinitely worse. If no relief is afforded, coal miners will begin to leave the state in large numbers.

Aside from the territory in the Kanawha district served by the Chesapeake & Ohio Ry., the remainder of the Kanawha district served by the Kanawha & Michigan, and the Norfolk & Western field, the Guyan field, the Raleigh and New River fields appear to have been well supplied with cars this week. A strike in the Charleston yards of the Kanawha & Michigan Ry., Saturday morning, as a protest against the general yardmaster in charge there threatened, however, to tie up traffic on the Kanawha & Michigan and also to affect the interchange of cars to and from the Chesapeake & Ohio and the Coal & Coke railroads,, as well as to affect Government business, since the connecting roads mentioned have much freight for the Government powder plant at Nitro.

Conditions in the New River field, which have been so bad for the last fortnight, owing to an inadequate power supply, were much improved this week, the most gratifying feature of the situation there being a 100 per cent. car supply. This was directed by the Government authorities in order to meet the demand for navy and bunker coal. With cars available the mines in the New River district were able to materially increase their output.

Fairmont, W. Va.

The car supply in the Fairmont district (the Monongah division of the Baltimore & Ohio) has greatly overshadowed the labor supply recently, and with the scarcity of mine workers it has been found out of question to load all the cars coming into the region. D. R. Lawson, district representative of the Fuel Administration, who has his office at Fairmont, attributes the falling off of the car supply on Friday and Saturday of last week (the only light days in some time) to the submarine raiders. Boats did not make Curtis Bay or St. George on time, owing to the scare, which held up the loading of coal. Dumping started in earnest again Thursday of last week and the work has caught up Monday morning according to advices. All existing records for rapid loading were broken recently at Curtis Bay.

The car supply in the Fairmont district was good for the 19 working days from May 27 to June 17, averaging 1337 cars a day, which is in great contrast to the car supply from December to April when the average was 500 cars a day.

The 1769 cars in the Fairmont-Clarksburg region Monday were divided as follows: Coal 1769, coke 64, extra privately owned cars 55. A wreck on the Baltimore & Ohio near Clarksburg interfered with the Elliott mine getting its supply of cars Monday, the road being blocked.

Birmingham, Ala.

The Alabama mining district is in the grasp of a patriotic movement, and Sunday, at the principal mining centers, various speakers sought to impress on the workers the need of full coöperation in the Government program to increase the production of coal as a means toward winning the war. Meetings were held at Sayre, in the western part of Jefferson County, at Littleton and at Jones. Organizers Harrison, Prentice, Foster and Jones, of the United Mine Workers of America, and George Bondurant and P. H. Woodall, of the Four Minute Men, addressed the meetings. The miners were urged to work to their fullest ability and assist in the largest production throughout the coal district.

Increased output at mines is reported this week throughout the entire mining district of Alabama. There has been some sagging, but as a rule labor is putting forward its best effort and results show up most favorably as compared with the mine production 15 days ago. Production is 15 per cent. less than it could be if there was more effort given. Some of the mine employees charge the loss of production to the condition of mine and railroad facilities. However, the hope is expressed that before the end of the month the coal production will have taken on a big increase.

Toronto, Canada

Secretary W. M. Neal, of the Canadian Railway War Board, in a recent interview stated that it was impossible to exaggerate the gravity of the Western fuel situation. The movement of coal from the Western mines must increase at once if the people of the prairies are to have the means of keeping warm next winter. Canada's coal supply from American mines will be curtailed this year, and the West will find itself compelled to use Western coal. This must be ordered now and moved now, as in the fall every eastbound car from the foot of the Rockies to Winnipeg will be required for crop movement. The railways, under the direction of the Canadian Railway War Board, are prepared to move the greater part of next winter's supply before October, but the mines are only loading a fraction of the supply of cars available for them. Good explanations are offered. In one case the mine is unable to load cars on account of labor troubles, in another the mines are not receiving orders from the Western dealers. But whatever the reason may be, a solution must be found promptly. Last winter the railways were able to help out the public by supplying coal from their own reserves. Next winter this will not be possible, the reserves being depleted. Some towns are getting together to finance next winter's fuel bill for their people, and some of the mines are taking special measures to increase production and loading. These examples must be followed and enlarged upon if the West is to be saved from distress if not disaster, next winter.

PENNSYLVANIA

Anthracite

Shamokin—The yards of the Philadelphia & Reading Coal and Iron Co., at Newberry Junction, are choked with shipments of coal, and overhead docks are being built to expedite the work of coal engines engaged in moving the fuel.

Lansford—Three men were killed and two were seriously injured in the Lehigh Coal and Navigation Co.'s No. 4 mine on June 15. The men were engaged in timbering a turnout in the gangway when the top gave away, burying them beneath the mass.

Edwardsville—Charged with uttering disloyal remarks against the United States Government and the American Red Cross, Jacob Stanick, an Austrian, who gave his age as 25, was arrested on June 14 at one of the Delaware & Hudson collieries by special detectives of the company. He is now in the Lackawanna County jail, in default of $1000 bail.

Pittston—The men engaged at the Pickaway colliery of the Quinn Coal Co. held flag-raising exercises on June 14, and with the workmen and residents nearby a large crowd was present. In the various drives for the Third Liberty Loan and the Red Cross all the miners contributed a day's wages, placing the large plant in the 100 per cent. class.

Oneida—Mrs. Apolonia Ambrose has been awarded a total of $1328.50 for the death of her husband, who was employed by the Lehigh Valley Coal Co. He had his foot cut while at work and it caused a pre-existing tubercular condition of the lungs

to be aggravated. This award by the Compensation Board sets a new precedent, as it gives an award in a case where an injury caused an old ailment to be aggravated.

Kingston—Under the direction of F. E. Zerbey, general manager of the Kingston Coal Co., a sawmill was erected some time ago at No. 4 colliery, and systematic collection and cutting of waste wood was instituted. The result was the speedy accumulation of a large wood pile. The miners were quick to take advantage of the company's offer to sell this wood at cost. So far as is known, the Kingston Coal Co. is the first to inaugurate systematic use of waste wood.

Lavelle—An attempt of the Schuykill Coal Co. to obtain a right-of-way through the farm of George Mather met with legal resistance on June 13. The right-of-way extended through a field of oats, and Mather and his friends were guarding it with shotguns when Mather was called away. During his absence workingmen of the coal company entered the land and erected piers for an overhead railway to be used for the transportation of culm. Judge Bechtel granted a preliminary injunction against the company.

Old Forge—Edmund B. Jermyn and Joseph J. Jermyn have secured from the Lehigh Valley Coal Co. the culm pile at the old Sibley mine and will at once begin preparations for washing the coal and putting it on the market. With this end in view an application will be made on July 5 for a charter for the Dennington Coal Co. The bank is estimated to contain about 250,000 tons of coal. Some time ago the Lehigh Valley Coal Co. sold the remaining coal at the Sibley to the Pennsylvania Coal Co., and the coal mined in the Sibley workings is taken underground to the Pennsylvania's Old Forge colliery. After the coal was sold the Sibley washery and breaker was dismantled, and the company now has no means at hand of screening this coal unless a washery is erected. The Jermyns, who have acquired the dump, have a washery at their colliery, which is a few hundred feet from the dump just acquired.

Bituminous

Chambersville—Eliza J. Smith and brothers, operating the Peterman mine here have ten houses under course of construction for the use of their miners. This mine is a new operation, but the production has increased so rapidly that it has been necessary to make further provisions for the workmen.

Lovejoy—The Estep Brothers Coal Mining Co. has installed electrical power in its mine here. Electric locomotives, compressors, pumps, etc., are now in operation and the production has been increased greatly. A new drift mine is being opened near the present mine and the coal will be all loaded over the same tipple.

Butler—The Brewster mines of the Big Creek Coal Mining Co. at Wahlville, near here, are now electrically equipped. The power was turned for the first time one day last week and everything went off without a hitch. Electric mining machines, pumps and motors have been installed. It will increase the production more than four times what it has been in the past.

Johnstown—T. Stanton Davis, representing a syndicate of Cambria County coal operators, has purchased 4200 acres of coal land in the vicinity of Cambria township, the consideration being in the neighborhood of $850,000. The new field is in the vicinity of Ebensburg, the county seat of Cambria County, and a new town is to be developed there and called "Hart-Bee." Branches of the Pennsylvania and New York Central railroads are to be built into the new town.

Locust—The Locust Colliery Co., controlled by James Pierpont & Sons, of Philadelphia, is making many improvements to its new mine here. A new shop and power plant is being erected and machinery installed, the side tracks are being lengthened to provide for the increased tonnage and several houses are being built for the workmen. The new houses are the same type as was erected last year and provide comfortable and improved quarters for the miners, which Mr. Pierpont believes one of the essentials in keeping good men.

Pittsburgh—The Agricultural Department of the State of Pennsylvania, and the same department of the United States, have sent experts to western Pennsylvania to make tests with the lands which are being destroyed for agricultural purposes by the coal-stripping process, with a view of reclaiming the lands and putting them back into a condition which would again permit them to be farmed. The largest stripping operations of this district are in Washington County, and it is here that tests are being made. If successful it will reclaim hundreds of acres that would otherwise be useless after the coal has been excavated.

WEST VIRGINIA

Thurmond—The Clay Coal Co., of Thayer, of which C. M. Holliday is president, is erecting a new bin for smithing coal at its Ridgeview mine.

Harwood—A mine is being opened between Harwood and Shinnston by the New Superior Coal Co., and a new tipple is under construction. The company, which owns about 66 acres of coal land, plans to begin producing coal by July 15.

Huntington—As soon as a sidetrack from the Chesapeake & Ohio is put in, the Weewin Coal Co. on Arbuckle Creek will begin to ship coal, the plant being ready to operate as soon as transportation facilities are provided.

Phil C. Jack and others, of this city, have purchased the plant of the Glen Elk Coal Co. on the Kanawha & West Virginia Railway.

Charleston—The Mordue Collieries Co. expects to be able to begin shipping coal from its mines on Coal River in July.

The Boone County Coal Corporation has purchased from Paul Hardy and associates the Dobra mine on Coal River, from the Coal River Coal and Coke Co., this mine having a drift opening and a 5-ft. seam. With purchases recently made the Boone corporation now owns about 20,000 acres of coal land and is operating 12 mines producing about 40,000 tons of coal a month.

Mabie—Plans are being made by the Randolph Smokeless Coal Co. to build a plant near Mabie, in Randolph County, to cost approximately $100,000, covering electrical equipment, an incline leading to the mine or mines, etc. Engineers are now at work with a view to preparing specifications of what is needed. The coal will be reached by a drift mine. The organization of the company has been perfected by the election of A. F. Bennett as president; W. T. George as vice president; R. E. Talbott as treasurer and H. J. Wilcox as secretary. All the officers reside at Philippi.

NORTH CAROLINA

Cumnock—The Cumnock Coal Co. is building 20 new houses for its employees. The houses will be equipped with water and sewer conveniences, and will be modern in every respect. The company has completed a new tipple and will soon be taking out coal from the old shaft. At present two or three cars a week are coming out from the air shaft. The workings will soon be in shape to begin mining on a commercial scale, although the coal will not go into the market, as it will be used by the engines of the Norfolk Southern road. The Carolina Coal Co. on an adjoining property, is in about 5 ft. of nice, clean coal, and expects to be taking out coal for the local market in a few days. Analyses of these coals show a high volatile content, low sulphur and low ash.

KENTUCKY

Madisonville—The Memphis Coal Co. will shortly erect a steel tipple at Mannington, Ky., where the company has purchased the Lamb and Franklin mines, and plans opening a third mine. It intends to handle the output of the three mines over the one tipple.

OHIO

Zanesville—Fire, thought to have been of incendiary origin, destroyed the Pennsylvania R.R. trestle on the spur to the Monitor mine at Darlington recently. The Monitor mine is operated by the Burton-Townsend Brick Co. The loss from the fire falls on the railroad, which will rush the repair work.

New Lexington—Stripping operations in this vicinity are reaching considerable proportions, one company having just started work on a tract of 250 acres bearing a five-foot vein close to the surface. Stripping is expected to cut a larger figure in the production of coal this year than ever before, on account of the volume which can be produced at small expense and the need for increased production.

INDIANA

Brazil—Coal miners of Brazil, Knightstown and Harmony have called meetings for the purpose of framing a petition to submit to Director-General McAdoo asking that the miners' train on the Pennsylvania be placed back in service in order to transport the miners to and from work. They assert that such a move would increase the output of coal.

Hammond—Fires have been lighted in the first of the new openhearth furnaces of the $25,000,000 steel works of the Mark Manufacturing Co. at Indiana Harbor. Production of steel is expected in two weeks. The company has four rolling mills in operation producing plates. The new openhearth operation will be followed by the blowing in of a blast furnace, the first of several new ones to be built and the largest in the Calumet region of Chicago.

ILLINOIS

Pana—Harry Turner, who recently purchased 83 acres of the Hayward tract of land adjoining Pana, has sold the coal rights for $30 an acre.

Dawson—The Dawson coal mine has been sold by Mr. and Mrs. Edgar H. Buckley, of Bloomington, Ill., to L. E. Fischer, formerly general manager of the Illinois Traction System. The consideration is said to have been $100,000.

Bloomington—An appropriate flag-raising was enjoyed by miners of the McLean County Coal Co. on June 14. Addresses were made by Mayor E. E. Jones and Spencer Ewing, and community singing was a feature of the event. An 8-ft. flag was raised from the top of the shaft.

Hillsboro—The 325 members of Taylor Springs local, United Mine Workers, have voted to give $1 per month from their pay to the Red Cross for the duration of the war. This will amount to more than $4000 for the next year, beginning June 1, and this rate will be maintained as long as the war lasts.

O'Fallon — The following St. Clair County mines have been awarded Liberty Loan flags for going over the top with 100 per cent. of their employees as purchasers of the Third Liberty Bonds: Nigger Hollow No. 1, 301; Nigger Hollow No. 2, 590; Avery, 105; Shiloh, 392; Prairie, 300; Radium, 115; Little Oak, 298; Superior, 137; Muren, 144; Columbia, 114.

Marion—A new town is being built in the eastern portion of the county. It is three miles east of Pittsburgh and will be known as Paulton, on an extension of the Marion & Eastern R. R. A new mine is being sunk there by the Ernest Coal Co., which is controlled by Cosgrove & Co. of Johnstown, Penn. This new mine is going down on the 4500-acre tract and will be one of the largest mines in southern Illinois when finished. It is understood that the new town will be named after Paul Cosgrove, who died a few months ago and who was in charge of Cosgrove & Co.'s interests in the west.

Belleville—The question of whether the exigencies of war justify violation of mining laws is raised in an injunction suit that has been brought in the St. Clair County Circuit Court by the Signal Hill Coal Co. against Thomas C. Wright, state mine inspector, to enjoin him from keeping the company's mine shut down on account of the escapement shaft being less than 250 ft. from the main shaft. The company says in its petition that it operated before the law was enacted, with the shafts nearer than 250 ft. apart, and it is contended that the mine should be permitted to continue operating because of the critical shortage of coal. Arguments will be heard in a few days.

Harrisburg—The Wasson Coal Co., one of the big producers in Saline County, has filed suit against the Central Illinois Public Service Co. for $125,000 and another suit for $175,000 against the Southern Illinois Railroad and Power Co., which is a successor to the first mentioned defendant. The suits are based on the alleged failure on the part of the light companies to carry out the stipulations in a contract for power. During the past winter the mines depended upon the power companies and were shut down many times on account of no electricity. Many other mining companies in the southern Illinois field have contracts which have cost them enormous sums in idle times during the past winter.

Foreign News

Edmonton, Alta.—John T. Stirling, fuel administrator for Alberta, states that fuel orders are coming in satisfactorily from Winnipeg. There were on an average 1200 tons a day being shipped from the Drumheller mines to Manitoba, and the amount was steadily increasing.

Medicine Hat, Alta.—Work on the development of the Ainsley coal mine near Medicine Hat is scheduled to commence at once, and it is reported the daily output will be 1000 tons. The mine will employ

200 men. A spur track is to be built from Medicine Hat to the mine. The Ainsley mine was only a small enterprise before being taken over by an American financier.

Edmonton, Alta.—The provincial government is arranging a system of inspection for all cars of coal shipped out of the province. This is being done to remedy the complaint coming from the Winnipeg market that dirty coal is being shipped out. In order to hold the outside market the best grades of coal only will be shipped to the other provinces, and the softer grades used nearer home.

Winnipeg, Man.—Demonstrations showing how to use western Canadian coal to the best advantage were held for ten days commencing June 6 and were attended by hundreds daily. About a dozen hot-air and hot-water furnaces, ranges and stoves were in operation, with A. E. Wilson of Drumheller, Alta., acting as demonstrator. Printed instructions as to how to burn Alberta coal in the ordinary stoves and furnaces were distributed.

Personals

G. H. Marting, formerly mine manager for the Whitaker-Glessner Co.'s mines, is now managing the Milburn Byproduct Coal Co. at Milburn, W. Va. The company is owned by the Citizens Gas Co., of Indianapolis.

John T. Lewis, of Johnstown, Penn., has been appointed by Seward E. Button, chief of the Department of Mines of Pennsylvania, as inspector in the Twelfth Bituminous District, and will have headquarters at Punxsutawney. He assumed his duties on June 20.

George R. Henderson, of Philadelphia, Penn., has been appointed federal administrative engineer for Pennsylvania. Mr. Henderson has assumed his office and will supervise the inspection, survey and investigation of boiler houses and power houses in all plants in Pennsylvania outside of the Pittsburgh district.

Obituary

W. A. McCloud, one of the first men to develop the Linton, Ind., coal field, died at his home, 918 Fairfield Ave., Indianapolis, Ind., June 12. While superintending a mine in Clay County, Indiana, last July, he fell from a coal car, receiving injuries which had confined him to his room since and which gradually led up to his death. He was 65 years of age.

Industrial News

Hazard, Ky.—The Bewley-Darst Coal Mining Co., Hazard, Ky., has purchased the Coneva plant,, near Hazard, and plans expenditures of several thousand dollars in improvements and equipment.

Louisville, Ky.—According to unconfirmed reports, the Kentucky River Power Co., Hazard, Ky., is planning construction of 25-mile transmission line to furnish power to a number of coal mines operating in the district.

Bee Pee, Ky.—The Williams Byproduct Coal Co., J. W. Williams, president, Fountain City, Tenn., has purchased machinery for developing 1500 acres of land, for daily output of 1500 tons. Will spend about $150,000 on equipment.

Kimbolton, Ohio—The Kimbolton Coal Mining Co. is opening a new slope mine at this place, Willis E. Holloway Co., of Cleveland, Ohio, being the engineers and contractors. The tipple is designed to produce 2000 tons per day of No. 8 Ohio coal.

Reedsville, Ky.—The John Runs Coal Co., S. M. Bradley, of Morehead, president, recently increased its capital from $15,000 to $30,000, and will develop 2000 acres of land, planning an output of two cars at start. The company may later install machinery.

New York, N. Y.—E. Kelly Downey has been elected a director of the Wholesale Coal Trade Association of New York, to fill the vacancy caused by the resignation of W. R. Coyle, who has reëntered the military service as a captain in the Marine Corps.

Wheeling, W. Va.—Contracts have been let by the Bertram Coal Mining Co., of Wheeling, to the Willis E. Holloway Co., of Cleveland, Ohio, for the work in connection with its stripping property at Romaine, Ohio. The property is to produce 3000 tons per day

Star Hill, Ky.—The Star Hill Coal Co., recently organized, plans a small development on 135 acres of coal land, and will install mining machinery. E. W. Roach is president and manager, J. B. Rogers, vice-president and G. W. Nicholson, secretary-treasurer.

Charleston, W. Va.—The Brick Coal Mining Co. has been formed to operate mines in Upshur and Harrison Counties, the authorized capital stock being $100,000. The incorporators are J. Kandt, of Detroit, Mich.; D. J. Carter, Harry W. Sheets, B. B. Jarvis and C. D. Duthie, of Clarksburg, W. Va.

Paducah, Ky.—The Columbia-Panama Coal Co., H. H. Hardringe, Chicago, president; W. A. Calhoun, Paducah, chief engineer, plans development of 2000 acres of coal land on Cumberland & Manchester R. R., at Goose Rock. Has asked for prices on mining equipment, plans mining town, tramway, etc.

Morgantown, W. Va.—H. C. Greer, Albert Shuman, C. E. Watson, J. L. Hatfield, all of Morgantown; and J. P. Burbridge, of Dillslow, W. Va., are the incorporators of the Burbridge Coal Co., which has been incorporated with an authorized capital of $5000 to operate mines in Monongalia County, West Virginia.

Charleston, W. Va.—Among the new coal companies organized last week was the Guy Pocahontas Coal Co. of War, McDowell County, West Virginia, incorporated with a capital stock of $5000, the incorporators being W. M. Guy, S. E. Massey and Eulalia Little Guy, all of Bramwell, W. Va.; J. W. Johnson and V. T. Stricklen, both of War, W. Va.

Morgantown, W. Va.—The application of the Monongahela Railway Co. for permission to build a line along Scott's Run from the Monongahela River to Cassville, in order to accommodate mines at that place, has been denied. The application was opposed by the Morgantown & Wheeling R. R. on the ground that the proposed extension would parallel its own line.

Charleston, W. Va.—H. P. Brydon and brothers have secured a charter for H. P. Brydon & Bro., Inc., the company to operate coal lands and operate a supply depot for miners. The company is capitalized at $50,000 with the following as incorporators: H. P. Brydon and T. F. Shaffer, both of Cumberland; E. R. Brydon and S. B. Brydon, of Bloomington; Ned and Edward James, of Piedmont.

Columbus, Ohio—A flag-raising ceremony was held June 14 at practically every coal mine in the Buckeye State. Arrangements were made by the mine owners, state officials and Secretary W. D. McKinney, of the Southern Ohio Coal Exchange. The ceremonies consisted largely of patriotic songs, speeches, and the raising of the American flag. Practically every available large American flag in Columbus was purchased for the occasion.

Buffalo, N. Y.—W. C. Blodgett, Buffalo representative of Dickson & Eddy, has been appointed collector of statistics of anthracite shipments by lake for the lower lake ports, by the anthracite commission now sitting in Philadelphia. All shipping agents report to him daily the amount of coal loaded, also destination and consignee. He has long been acquainted with this work The former connection will be maintained, with the Buffalo office as headquarters.

Toledo, Ohio—More activity in lake shipments is shown by the reports of loadings at the Toledo & Ohio Central and Hocking Valley docks during the week ending June 15. During the week the Hocking Valley docks loaded 160,713 tons as compared with 11,744 tons the previous week, making a total of 892,293 tons for the season. The Toledo & Ohio Central docks loaded 79,000 tons compared with 7000 tons the previous week, making a total of 484,000 tons for the season.

Columbus, Ohio—Double-tracking, the building of new yards and the enlargement of present ones, the construction of a 15-stall roundhouse at Galion, and other improvements on the Big Four, requiring an expenditure of approximately $10,000,000, for the purpose of bettering and facilitating the movement of troops, munitions and coal for the winning of the war, were announced by Chief Engineer C. A. Paquette. The plans provide for double-tracking 58 miles of the Columbus-Indianapolis division and 38 miles of the Chicago division.

Bradshaw, W. Va.—The Bradshaw Coal Co., Bluefield, W. Va., organized by Edwin Mann, president; George S. Strader, secretary-treasurer, of Bluefield, W. Va.; Robert J. Hancock, Lynchburg, Va., vice-president; C. L. Biddilson, War Eagle, W. Va., engineer, has purchased the holdings of the Bradshaw-Pocahontas Coal Co. in McDowell County and plans improvements costing $75,000. Electricity will be purchased from the Appalachian Power Co., Bluefield, W. Va. The company was recently incorporated with capital of $300,000 at Lynchburg.

Buffalo, N. Y.—The supply of coke is only fair, and consumers are doing all they can to get a regular connection with some by-product plant building their own where possible, as it appears to be more economical to obtain the coke in that way where all the products are made use of. Development of the byproduct plant projected by the Buffalo Union and Donner companies in Buffalo has not begun yet, as it is hard to get men and material for the work. Beehive coke is bought of producers direct, and no prices are made here. Receipts of iron ore by lake for the week were 248,604 gross tons.

Cleveland, Ohio—Eastern Ohio operators are protesting against the alleged discriminatory distribution of coal cars in the eastern Ohio district as compared with certain parts of West Virginia. A statement issued recently shows that the car supply on the Wheeling division of the Baltimore & Ohio during the month ending June 15 was only 40 per cent of requirements, and that fully one-third was taken for railroad fuel, leaving only a small number of cars for the lake trade and to fill commercial contracts. It is also claimed on the Monongah division that operators are given approximately 100 per cent. car supply. Efforts have been made to call attention to this discrimination to the proper authorities, but without results. In the meantime eastern Ohio operators see their miners leaving for other fields or to enter steel and iron plants because of lack of work.

St. Louis, Mo.—Creation of a new railroad operating region west of the Mississippi River, to include the southwestern lines, with headquarters of the regional director at St. Louis, is the culmination of months of effort directed by the St. Louis Chamber of Commerce, with the purpose of having this district separated from the territory under the jurisdiction of R. H. Aishton, regional director of Chicago. It is the belief here that the action taken by the Government will greatly facilitate transportation matters in this district. Benjamin F. Bush, president of the Missouri Pacific Railroad Co., has been appointed regional director for the southwestern railroad division and has resigned the railroad presidency to take the position. The territory west of the Mississippi River is now divided into three districts, with Aishton directing the Chicago division, Bush the southwestern division and Hale Holden, president of the Burlington R.R., directing the central division.

Newark, N. J.—United States Attorney Lynch ordered a coal company to remove from the summer home of Forrest F. Dryden president of the Prudential Life Insurance Co., at Bernardsville, 56 of the 235 tons of coal it had delivered there. In his application for the coal Mr. Dryden explained that while last winter he had used only 195 tons, new buildings had been completed since then which would require a greater supply of coal next winter. He will have in his bins, when Mr. Lynch's order has been carried out, only two-thirds of the supply that he deemed necessary.

Louisville, Ky.—Coal rates in Kentucky will not be increased 15c. a ton over what they were on June 1, 1917, before adding the increase of 25 per cent. authorized by General Order No. 25, Railroad Administration. This was the contention made by the coal men at a hearing ten days ago, when a protest was launched against a 25 per cent. increase on top of the proposed increase of 15c. a ton, which had been accepted.

St. Louis, Mo.—The Interstate Commerce Commission hearing on the petition of the St. Louis Chamber of Commerce for the abolition of the bridge arbitrary of 20c. per ton on coal, which had been in progress two weeks, adjourned Friday, June 14, to July 9. The petitioners have finished their side of the case and several witnesses have been heard for the defense. The adjournment was necessitated by Commissioner Mackley having to return to Washington. It is expected that several more days will be needed to complete the hearing. The commissioner will then make his report to the commission. Attorneys for the Terminal Railway Association and the railroads will ask the commission to throw the case out on the ground that Director-General McAdoo's order increasing all freight rates directed that all existing differentials be preserved. Attorneys for the petitioners will contend that under the act creating the railroad administration authority to pass upon complaints was reserved to the commission.

MARKET DEPARTMENT

Weekly Review

Record Output of Bituminous Brings Feeling of Optimism—Anthracite Production About Normal—Car Shortage Gives Way to Scarcity of Labor—Bureau of Production to Speed Up Mines—New England Shipments Large—No New Industries for Atlantic Seaboard—Market Conditions Active

A FEELING of optimism is engendered by the record production of bituminous coal during the week ended June 8, when the output of soft coal reached the unprecedented total of 12,465,000 short tons. This exceeds by 1,691,000 short tons the production of the preceding week. The average daily output was well above 2,000,000 short tons, which amount of coal must be shipped every working day for the rest of the coal year if estimated demands are to be met. It must be remembered, also, that to date we are behind considerably more than 26,000,000 short tons of bituminous coal. Shipments of anthracite for the week ended June 8 totalled 40,754 cars, which is about normal output for the hard-coal mines under the existing labor conditions.

Though the shortage of cars continues to act as a bar to the greater production of bituminous coal, particularly in West Virginia, this condition is being alleviated rapidly. There is promise that ere long the most important producing sections will be receiving close to 100 per cent. car allotment. The laying of the car-supply ghost, however, has seen the rise of another to haunt the coal operator. This time it is labor shortage, a factor which bids fair to become the chief deterring reason to maximum output.

Realizing that labor in the coal mines must be inspired to do its best, James B. Neale, who heads the newly formed Production Bureau of the Federal Fuel Administration, is planning a nation-wide campaign to speed up coal production. The workers at the mines are to be addressed by well-known men, and the operators will be urged to do their utmost to expedite production by providing every facility and convenience which will aid the employees to mine more coal.

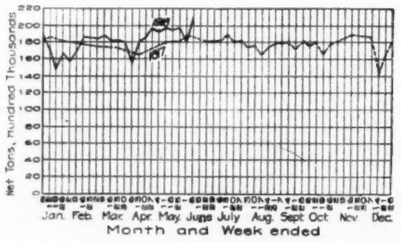
After a careful study of New England's requirements, the Fuel Administration apportioned 30,000,000 short tons of bituminous coal to that section. Steps have been taken to insure the delivery of 60 per cent. of the total amount by Oct. 1. To do this it will be necessary to ship considerable coal to New England during the next three months, as forwardings in April and May were below the average which should have been maintained. Mines in Central Pennsylvania have been ordered to ship to New England 45,000 tons a day, or almost 20 per cent. of the entire production of the soft coal mines of Pennsylvania.

Industrial development in the East and in New England having reached the point where it is no longer feasible to permit the erection of new plants and factories, further industrial expansion in these sections has been prohibited by joint action of the War Industries Board and the Fuel Administration. The order is intended to force new industrial activities in districts where fuel and raw materials can be transported over lines that are not congested. The restricted area consists of the New England States; eastern and southern New York; Pennsylvania, as far west as Williamsport and Altoona; all of New Jersey, and Delaware and eastern Maryland, not including Baltimore.

Market conditions are quite active. The sharp demand for domestic and steam grades continues, and the storing of domestic coal is going on at a good rate. However, receipts by dealers are not half the tonnage desired.

COAL PRODUCTION

Bituminous coal production during the week ended June 8 was the largest in history. The soft coal produced (including lignite and that made into coke) is estimated at 12,465,000 net tons, an increase over the week of June 1 of approximately 1,900,000 net tons, or 17.8 per cent., and the same increase over the week of June 8, 1917. The average daily production is estimated at 2,077,000 net tons, considerably in excess of the 1,791,000 net tons during the week



preceding and 1,789,000 net tons during the same week of the preceding year. Anthracite shipments during the week ended June 8 were 40,754 cars, an increase of approximately 9000 carloads, or 28.3 per cent., over June 1.

Beehive Coke—Production of beehive coke in the United States during the week ended June 8 is estimated at 638,000 net tons, an increase over the week preceding of 26,000 net tons, or 4 per cent. The average production per working day amounted to 106,000 net tons as compared with 102,000 net tons during the week of June 1. The principal operators in the Connellsville, Greensburg and Latrobe districts of Pennsylvania produced 362,075 net tons of coke during the week ended June 8, or 77.2 per cent. of their present capacity compared with 75.6 per cent. during the week ended June 1. Of the factors limiting production, amounting to 22.8 per cent. of present capacity, 0.5 per cent. is due to shortage of coke cars, 18.3 per cent. is attributed to insufficient yard labor, 0.2 per cent. to plant disability and 3.8 per cent. to all other causes. The same operators produced 161,400 net tons of coal.

CARLOADS OF COAL ORIGINATING ON PRINCIPAL COAL-CARRYING ROADS

	Week Ended May 18	May 25	June 1	June 8
Bituminous shipments, 123 roads.	205,026	207,036	188,318*	220,607†
Anthracite shipments, 9 roads...	41,011	40,594	31,762*	40,754†

* Revised from last report. † Subject to revision.

Byproduct Coke—Operating conditions in the byproduct industry improved during the week ended June 8, causing slight increase in production. The plants of the country operated at 88.3 per cent. of their present capacity as compared with 87.7 per cent. the week preceding. Of the total losses of 11.7 per cent., 2.7 per cent. was attributed to lack of coal, 3 per cent. to labor shortage, 5.1 per cent. to repairs to plants, 0.2 per cent. to "no market" and 0.7 per cent. to all other causes. Material improvement was reported by operators in Maryland and Ohio, production by the operators in the former state rising from 98.7 per cent. to 100 per cent., and in the latter state from 94.5 per cent. to 96.7 per cent. Lack of byproduct coal caused the operators in Tennessee to report the ratio of production to present capacity at 62.7 per cent. Labor shortage and plant repairing in Pennsylvania continue to be the factors limiting production, thereby causing Pennsylvania operators to report the lowest ratio of the large producing states—73 per cent. of present capacity. "No market" losses in Minnesota declined sharply during the week ended June 8—from 9.3 per cent. to 5.4 per cent.

BUSINESS OPINIONS

Dry Goods Economist—Early this week the announcement was made that the War Industries Board had determined to stabilize the prices asked for cotton fabrics and had called upon leading cotton goods manufacturers and distributors to name the prices that should be asked for various grades of cotton goods and to explain the basis on which the prices suggested had been determined. Manufacturers, converters, wholesalers, retailers and even consumers are affected by this action of the War Industries Board, since in the future all will be called upon to pay for cotton goods on the basis of the prices to be determined by the Board. Even contracts already entered into will be subject to revision if the goods they call for are delivered later than certain specified dates.

Bradstreet's—In its broadest respect, business in general eclipses that of this time last year, but of course the largest single disburser is the government, its daily expenditures now averaging about $57,000,000. In ordinary channels business is getting closer to a cash basis, and naturally so, for such sellers as have goods available are in a position to make terms as well as to select customers. Jewelry, liquors, beer, ordinary building and other so-called less essentials are in the doldrums, as it were, and liquor dealers are going out of business.

Marshall Field & Co.—Current wholesale distribution of dry goods has been very

much in excess of the large shipments during the corresponding period a year ago. Road sales for the week for immediate and future delivery show a splendid increase over those of the same week in 1917. Customers have not been in to market in such large numbers as last year. Collections show a good increase over those of the corresponding week a year ago. The cotton goods market is firm.

Atlantic Seaboard

BOSTON

More hopeful outlook for New England due to Mr. Storrow's success at Washington. New plan now assumed to be in operation, but it will be some weeks before anything like maximum movement is realized. Query whether present plan will increase number of contracts with operators for consignment to this territory. Opinion is that producers will continue shy of commitments. Great interest in actual working out of distribution program. Multiplicity of reports, etc., is to its disadvantage, but local policing is the more sensible method. The main thing is for this territory to get its quota now when the railroads can haul the coal. Slow movement coastwise means a considerable loss in receipts. Hampton Roads dumpings decrease due to fewer arrivals of tonnage and the consequent diversion of shipments from tidewater to line and connecting railroad points.

Bituminous—June 10 was a favorable day for New England. The fuel authorities at Washington ordered certain district representatives to make up the quota for this territory all-rail by instructing operators to consign 100 per cent. on such contracts or orders as were on hand, and in addition to that volume of coal to send forward to the New England gateways enough more each week to bring consignments all-rail up to the full New England ratable proportion. In central Pennsylvania this would amount to 4500 cars weekly, based on current output. At the conference in Boston on June 4 on the "zoning" problem, it was shown by representatives of the New England railroads that the latter could easily handle 450 carloads more per day. This was brought to the attention of Mr. Garfield and the Railroad Administration with such force by Mr. Storrow and others interested in the New England situation that the whole New England program has been rearranged, so far as concerns all-rail deliveries. It has been understood that during May, for instance, all-rail consignments into New England from central Pennsylvania amount to only about 1700 cars weekly. The new order therefore calls for 2800 cars more from that one district, but this does not look so heavy as it might for the reason that the same readjustment of program provides that coal which formerly moved into New England from the Somerset, upper Potomac and Fairmont districts, which moved into New England all-rail, has been shut off upon the understanding that such coal will reach Providence or Boston via Curtis Bay or Port Covington piers at Baltimore.

The result of these broad instructions has been the cancellation of all directions to district representatives to ship only to preferred requirements. It is an important part of the plan that the policing is to be done by state administrators, and it will be the function of Mr. Storrow's office not only to regulate the flow of coal to all grades and kinds of consumers, but through the district representatives to put each buyer who has no contract in touch with an operator who will be in position to supply him, always bearing in mind that when production falls off then New England's volume of coal likewise drops down.

There are going to be enough problems involved in the operation of this plan, but obvious though some of them are, and large as the job is, it is much more feasible for an office like Mr. Storrow's, with representatives in every part of New England, to control it either at the gateways or at destination than to have the same thing attempted from Washington or by the district representatives. Any sag between the volume of coal covered by contracts in hand and the 4500 cars weekly is to be destined according to orders from Mr. Storrow, and to this end a considerable number of destinations have been furnished the Altoona office. The 4500 cars are to include railroad fuel as well, and it is expected a real effort will be made to build up stocks of locomotive coal. The whole program is subject to orders from Washington, and any day there may be heavy inroads on the New England quota to make up deficiencies from other districts. However, it is a real move in favor of coal for New England and comes as a decided relief after the alarming slump in receipts all-rail that was disclosed during May.

The fact that from Washington it is insisted that requirements be classified and tabulated in such way as to show in detail the course of each requirement only adds to the machinery of operation, but those who formulated the system have good courage and everybody wishes them well. The big thing is to get coal forward in due proportion during the months when the railroads are in position to handle it. Losses in movement during favorable weather are never made up later in the season.

While traffic is relatively light on the New England lines the question of car-miles is not so important, and for that reason any "zoning" of consuming territory is likely to be postponed. Without doubt it will come up prominently when there is any sign of congestion, and at that time the plan outlined at the June 4 conference will probably be carried out. It was agreed there should be a 30-day notice in order to give consumers a chance to adjust their contracts. As it is, the embargo of all-rail coal via Shippensburg is causing uneasiness to a good many consumers who for years have drawn their supply from territory tributary to the Baltimore & Ohio.

An important conference in Mr. Storrow's office on June 18 was attended by state fuel administrators and representative shippers, called there to discuss what compensation the state administrators should fix for "wholesalers" who handle coal only through barges or steamers which they charter from trip to trip. Application was made by one or two interests to have the charge extend to 5 per cent. of the delivered price, the argument being that the overhead, the capital involved, etc., were so large that 15c. per net ton was entirely inadequate. The subject was thoroughly gone into and all the points of view examined, but clearly the consensus of opinion was that any increase in compensation in view of approaching freight increases would be such an additional burden on the consumer as would not be warranted; that to allow a larger commission would only make it easy for some shippers to divide with "scalpers" nearer the mines; and that the net result would not be more coal for New England but would be merely taking away from the established agencies a certain tonnage that would normally come forward through the regular channels. A feature of the meeting was a clear statement by Thomas F. Farrell, vice president of the Pocahontas Fuel Co., representing the Pocahontas operators. He called attention to the price differential as between the smokeless coals and showed the complications that grew out of it. Mr. Farrell made a further impressive statement with regard to the draft and its effect upon labor supply for the mines.

Later the same day the state administrators gave attention to matters of policy with regard to the new distribution program. It was agreed that in all respects the six New England states should be handled as a unit and the amount of stock that should be supplied preferred requirements and other needs not preferred was discussed in detail.

The movement coastwise has not yet quite recovered from U-boat activity, but a considerable gain was made this week. There has been no day recently when the volume of coal was not largely in excess of the tonnage waiting at the piers. It was only natural that as dumpings decreased last week coal should be diverted to line points and to connecting roads.

Anthracite—Unhappily, there is no increase in the volume of domestic sizes that can be pointed to so far as this territory is concerned. For the first 16 days in June the average daily movement was but 524 cars, still well below the program. The percentage of steam sizes still hovers about 30 per cent.

NEW YORK

The trade urges appointment of state fuel administrator. It sees coal slipping to other markets. Anthracite retail dealers' receipts continue light. Shortage of coal feared by civic organizations. One company advances mine prices of buckwheat and smaller sizes. Bituminous continues short for commercial uses, but bunker coal is in good supply.

Anthracite—The appointment of a state fuel administrator to succeed Albert H. Wiggin, who resigned several weeks ago, would be welcome news to the trade here. Letters have been written to Dr. Garfield urging him to announce Mr. Wiggin's successor, and conferences have been held by representatives of various civic organizations in sections of Greater New York with the local fuel administrator urging such appointment.

Requirements in the Greater City are steadily increasing, and although the allotment made by the anthracite committee of the fuel administration of the entire state represents an increase of 12 per cent., that tonnage could practically be absorbed by local consumers. The trade points out that while the state is without a state fuel administrator to urge its needs this market is not reaping any benefit from the cutting down of Western shipments or of shipments to the 29 counties in western Pennsylvania as ordered by State Fuel Administrator Potter of that state.

The Bronx County Board of Trade is fearful that there will be a decided shortage of coal in that county next winter and has started out to find the reason for delayed shipments. It is claimed that the 21 retail dealers in that county have orders on their books for more than 400,000 tons, while the requirements for the county are placed at 1,344,000 tons.

Although it has been announced that the city authorities have options on 300,000 tons of coal to be sold to the needy next winter, the trade is still in the dark as to where this tonnage is to be obtained.

There has been no change in the situation regarding the sizes larger than and including pea, although some dealers did receive slightly increased shipments over the previous week because of the shortage of boats to carry coal to New England. Some of the largest yards in this city are reported to have contained less than 100 tons of coal at times during the week.

The steam coal situation has gained some strength, and one of the large producing companies has advanced its mine prices for buckwheat, rice and barley 25c. per ton. It has not yet been learned if any of the other companies will do likewise. The demand is spotted, and while some shippers have plenty of barley on hand others have none. Culm is plentiful with some of the shippers.

Current quotations, per gross tons, f. o. b. tidewater, at the lower ports of the follows:

	Circular	Individual		Circular	Individual
Broken	$6.50	$7.25	Pea	$4.90	$5.65
Egg	6.10	6.85	Buck	4.85	5.60
Stove	6.35	7.10	Rice	4.35	4.80
Chestnut	6.45	7.20	Barley	3.85	4.00

Quotations for domestic coals at the upper ports are generally 5c. higher on account of the difference in freight rates. Prices for buckwheat, rice and barley are not fixed by the Government.

Bituminous—The record production as recorded by Government statistics for the week ended June 8, when there was an increase of 1,900,000 tons over the previous week, made practically no change in the local situation. Coal was decidedly short for the spot buyers, while regular customers did not obtain any more than they could conveniently use. There has been no let up in the demand.

Producers and shippers were somewhat surprised by the announcement from Philadelphia on Monday that J. J. Storrow, fuel administrator for New England, had obtained permission from the Fuel Administration at Washington to ship to New England 900 cars of bituminous daily from the central Pennsylvania coal fields. Meanwhile it was pointed out that industries engaged in war production along the Atlantic seaboard are clamoring for coal. If this order is allowed to remain in force it will no doubt result in the New York market losing a portion of its already too meager supply.

Public utilities and their customers are again being urged to exercise the utmost caution in using electricity for advertising purposes and other display illumination. Should this alleged waste continue the suspension of the so-called "lightless night" order may be recalled.

PHILADELPHIA

Anthracite deliveries short. Retail labor troubles serious. New allotment not yet fixed. Production good, as well as car supply, with New England still preferred. Non-war plants denied buckwheat exemption. No coal in company storage yards. Steam prices advanced 25c. Government may act. Culm demand grows. Bituminous trade upset. Heavy rail shipments due to submarines. Car supply sharply cut in favor of southern shippers.

Anthracite—From the point of receipts the local situation continues unsatisfactory. The yards are bare, as coal is delivered as promptly as received. Despite real summer

weather consumers do not let up in their efforts to have deliveries made. As a consequence the dealers increase their pressure on the shipping agencies. During the past week the number of dealers calling on the sales agents has increased. That the dealers are losing no opportunity to get every ton of coal possible is shown by the number who in looking up their records have come across single cars of coal which they purchased in the 1916 period and are coming in to be assured that they will receive this car of coal.

The labor question is becoming more acute with the retailers each day, and they find it extremely difficult to keep enough men on hand to deliver what coal is received.

There has not as yet been any decision as to what part of the 18 per cent. increase of anthracite allotted to this state will be received by local dealers. It is understood that the decision in this matter hinges on the matter of how much coal the various operators have been shipping into the various territories which have now been prohibited from using anthracite.

From the production standpoint it can be said that the tonnage is almost up to the record of last year. The reason that it is not more is only because the men are not in the region, and while the reduction of labor from month to month is not heavy, yet in the aggregate it is bound to make itself felt. Unlike the bituminous region, however, there is hardly any trouble with the car supply, as during the past year or more there have been only a few occasions when any operation was idle for the lack of cars. Following out the request of the fuel administration all operations are now making daily reports of the car supply, and the authorities intend to keep the closest watch possible on this phase of the situation.

Practically all the local manufacturing plants have now had replies from Washington in reference to their applications for exemptions for the use of buckwheat coal. Of course, those concerns on war work found this application to be merely a matter of form. However, those engaged on non-war lines are finding themselves in trouble. Their use of the No. 1 buckwheat has been denied, and they are advised to go on either No. 2 or No. 3 buckwheat coal. Even this does not let them out of their difficulties, for most of them find themselves unable to procure any No. 2 or No. 3 buckwheat, as even these grades are closely sold. As a consequence of these refusals of exemptions a few of the smaller operators have had a few cars of buckwheat coal for sale, which generally have been sold around $4.50 for single cars. In this connection retailers who are selling anthracite for steam use are being closely pressed by the authorities to be careful that all such sales are covered by the exemptions necessary. With the big companies it is at times possible to get small quantities of barley or No. 3 buckwheat, as at times their production of this size is a little in excess of their current needs; but even they are not willing to take on new customers for any definite periods.

It is also well to note in connection with the general anthracite situation that the storage yards of the big companies, which in ordinary years begin about this time to fill up with all sizes of coal, from the domestic to the steam grades, are completely bare and do not hold a pound of coal. There is little likelihood, too, that they will receive any coal, except for a light tonnage of barley as midsummer approaches.

The trade was somewhat surprised when on the 12th inst. the Philadelphia & Reading Coal and Iron Co., from its general offices here, announced an increase of 25c. per ton on all steam sizes from buckwheat No. 1 down. There was nothing to indicate that such a plan was in contemplation, and the increase means quite an item to manufacturers, as in addition to this on the 25th inst. the new freight rates with advances approximating 25 per cent. go into effect. The big companies have little of their steam sizes under contract and this means that they will get the new price on fully 75 per cent. of their production. A feature of the present increase is that the price of Lykens Valley No. 1 buckwheat is higher than the same grade of pea coal, and this has caused quite a little comment. It would not surprise any one to see this price adjusted, for some months back individual shippers were selling their buckwheat to steam users at a higher price than they were getting for their pea coal. The Fuel Administration in this instance simply called their attention to the inconsistency, without requesting any action; but that was sufficient, and the prices were adjusted to a more equitable basis. It is possible that the Government might take the opportunity now that the question is opened to set the prices for steam grades the same as they have for domestic fuel and also for bituminous coal.

While the market locally is not active on culm, it is known that heavy shipments of this material are being made to eastern points. In New England the demand for this coal is increasing and heavy tonnages are going there. While heretofore the independent operators have had the bulk of this trade, having practically blazed the way for it, the larger companies have now gone into the market and are selling a fair tonnage. Most of their trade as yet is through middle houses, who have developed a market for it and called on the big companies for supplies.

The prices per gross ton f.o.b. cars at mines for line shipment and f.o.b. Port Richmond for tide are as follows:

	Line	Tide		Line	Tide
Broken	$4.90	$6.25	Buckwheat	$3.40	$4.40
Egg	4.50	5.85	Rice	2.90	3.80
Stove	4.75	6.10	Boiler	2.70	3.70
Nut	4.85	6.20	Barley	2.40	3.30
Pea	3.45	4.70	Culm	1.25	2.15

Bituminous—Late in the week the bituminous operators received quite a jolt. Due to the good car supply which they suddenly began to enjoy a few weeks since, they were feeling comparatively comfortable as to the immediate future. Then came a drastic ruling that on account of the submarine activity off the coast a greater tonnage of coal must go via all-rail from southern points into New England. This order of the fuel administration simply laid on their backs the central Pennsylvania operators, who had begun to ship heavy tonnages into this market. While recognizing the fact that New England is entitled to a fair proportion of coal, they cannot see why the entire market should suffer so drastically. Prior to this latest edict, on the 14th inst., the tonnages of soft coal coming into this market were quite sizable and consumers were storing for future use. The changed conditions in the car supply up to the 14th inst. were particularly noticeable among the jobbing houses, who after just about existing for months past were again receiving a fair volume of coal, with every prospect of doing some good business for the rest of the year. Even at that no one is without hope that the situation may change as quickly as the unfortunate circumstances arose which made the new ruling on cars necessary.

BALTIMORE

Application of the Maryland compulsory work law comes to aid of coal business. Soft coal supplies fairly liberal, but poor as to grade. Anthracite situation still troublesome.

Bituminous—The iron hand of the law is being extended by the Compulsory Work Bureau of the State of Maryland, of which George A. Mahone is director. In Baltimore the coal yards have been placarded with signs which tell all workers, of whatever degree, that the law of Maryland requires every man between the ages of 18 and 50 inclusive to be continuously employed. Notice is given that three or four days does not constitute a week's work, and prosecution followed by fines and imprisonment, or both, will be inflicted on work slackers. The distribution of coal in the city will be greatly aided by the move. There is now a plan being worked out which will probably extend the same law over every branch of the coal business in Maryland, and mine work should be greatly speeded thereby. Meanwhile the diversion of coal to this city continues comparatively heavy, and there is not much talk now that this or that industry is near the danger line as to supply. There has been some kicking by customers, however, as to the grade of some of this coal. As a matter of fact some of the coal coming here is very poor, and there have been continued heavy rejections by the fuel administrator at the tidewater pool.

Anthracite—The hard-coal situation, with receipts still comparatively light at a time when the big inrush should be taking place, still troubles the retailers and the local fuel administration. Little satisfaction has been gained by either as to the source from which Baltimore is finally to get its coal, if at all, in the proportion needed. The general statement is made that a plan is still being evolved to eliminate long and cross-hauls, and the coal will come through finally—when, no one can say. Meanwhile the trade, despite the protest sent from here to Washington against a freight rate increase before Sept. 1, is prepared to see the raise go into effect before the end of the month. Just how the increase will be apportioned is a matter worrying the trade, but the dealers cannot see how their profit margin can be reduced any in view of the steadily mounting costs of materials and general overhead charges. Receipts here the past week were light, with the exception of pea coal, which is coming through freely.

Lake Markets

PITTSBURGH

Production somewhat improved. Moderate amount of stocking. Car shortage chief limiting factor. Occasional slight price shading.

Production in the Pittsburgh district has been improving slightly, along with the rest of the country. The excellent report made public at the beginning of this week, showing for the whole country 12,465,000 tons of bituminous coal mined in the week ended June 8, is believed to have been helped by the Pittsburgh district as much as by other districts, and production was fully as large last week. Curtailment in this district is still due almost wholly to car shortage, according to operators' reports, little loss of production being ascribed to labor shortage; whereas there is the curious contrast that in the Connellsville region car shortage is about past, and labor shortage is the restrictive influence. With a full-car supply in the Pittsburgh coal district, however, a labor shortage might be uncovered.

There is a trifle more stocking of coal, but on the whole not as much as there should be, to insure an absence of trouble next winter. Retail dealers are well supplied and by reason of the propaganda householders are laying in their stocks early in many cases.

On the whole the market is holding up to the set maximum prices, and brokers are occasionally able to secure a commission from the consumer in addition. There are, however, occasional instances of large consumers buying at a trifle under the set maximum, say 10c., particularly for screened coal. This still nets the operator a shade more than mine-run, as there is no difficulty in securing the full price for slack. The general market remains quotable at the set prices: Slack, $2.10; mine-run, $2.35; screened, $2.60, per net ton at mine, Pittsburgh district, jobbers being permitted to charge 15c. brokerage in addition.

BUFFALO

Bituminous trade dull. Jobbers looking to Pittsburgh for relief, but not getting much. Some stocking up now. Anthracite scarce. Lake shipments good.

Bituminous—The trade continues unsatisfactory to the jobbers, who are wondering when the better showing is to take place. They recall that the authorities who talked to them at the jobbers' national convention were all sure of a better arrangement, so that they could handle the coal that goes out, but they do not see any change for the better yet.

Last week a large number of Buffalo jobbers were in Pittsburgh looking for coal, but it does not appear that much was obtained. The fact is that demand is not what it ought to be from a jobber's point of view. The consumption is good and there are more reports of consumers stocking up, but the coal appears to slip by without coming into the hands of dealers here.

The supply conditions are much the same as before. Canada has a surplus westward and is gaining on the shortage in the St. Lawrence district. New York state is pretty well provided for but New England is short. It is learned that the authorities are working on a plan to carry coal on the canal, which ought to help solve the transportation problem eastward. One difficulty is that the supply of canal boats is small.

The latest rulings of bituminous prices make them as follows for Buffalo: $4.65 for thin-vein Allegheny Valley, all sizes; $4.45 for Pittsburgh lump; $4.20 for Pittsburgh mine-run and $3.95 for slack, all per net ton, f.o.b.

Anthracite—The demand locally much exceeds the supply, which has run down lately to about half the former amount. The claim is that the Government is taking it. A light supply once or twice a week is all that can be depended upon. Dealers are complaining of a note put in the local papers by the county fuel administrator urging people to lay in their coal now, when the present supply is so light that consumers are raising a big din about it.

The amount of anthracite loaded in the lake trade for the week was 109,000 net tons, of which 49,200 tons cleared for Duluth or Superior, consignee's option, 16,900 tons for Milwaukee, 15,800 tons for Sheboygan, 14,900 tons for Chicago and 12,200 tons for Fort William. Freight rates continue easy at 48c. to Duluth and Fort William, 50c. to Sheboygan, 55c. to Milwaukee and 60 to 65c. to Chicago.

DETROIT

Deficiency in receipts of anthracite and bituminous continues. James Couzens is

named chairman Wayne County fuel committee. Lake movement drags.

Bituminous—Jobbers and consumers alike are inclined to regard the present conditions as lending a far from reassuring outlook to the future. The volume of bituminous coal shipments arriving in Detroit shows no material increase. Receipts range around 400 cars a day and below, when current requirements and the necessity for accumulating reserves should be supplied with from 700 to 800 cars daily. Mine-run is constituting the larger proportion of the incoming shipments. Slack, domestic lump and other sizes are not plentiful.

Despite the fact that Edgar B. Whitcomb has disregarded the demand of W. K. Prudden, Michigan fuel administrator, and continues to decline to turn in his resignation as chairman of the Wayne County fuel committee, the state fuel administrator has proceeded to announce the appointment of James Couzens as Mr. Whitcomb's successor. Mr. Couzens is the multi-millionaire police commissioner of Detroit, former vice president of the Ford Motor Co. In earlier life he was a clerk in the coal office of Alexander Y. Malcomson. He was a member of the Wayne County fuel committee, of which Charles A. Dean was the third member. Mr. Prudden has not indicated whether Mr. Dean is to continue on the committee with Mr. Couzens. Meantime petitions have been circulated in Detroit and are to be sent to the Federal Fuel Administrator and Governor Sleeper, of Michigan, asking for the removal of Mr. Prudden as state fuel administrator or the creation of a new district including Detroit and Wayne County, independent of the remainder of the state.

Anthracite—There is no improvement in the matter of anthracite supply. The daily receipts in June have averaged little more than 30 cars a day. Household consumers are vainly striving to get their winter supply. Retailers are unable to fill orders and some of them are declining to book orders.

Lake Trade—Shipments of coal over the lake routes are falling short of the expectations of shippers and vessel owners. During the early part of last week average daily loading of vessels was about 100,000 tons. Toward the end of the week the movement eased off. To supply needs of the Northwest, it is calculated that weekly shipments should amount to about 1,000,000 tons until the coming of cold weather.

COLUMBUS

Labor shortage as well as shortage of cars is cutting production in Ohio mining districts. Demand for all grades continues active in every locality.

The coal trade in Ohio has been rather slow during the week. This was due largely to a reduction in production, which was reported from all of the mining districts of the state. With the demand for steam, domestic and lake tonnage as insistent as ever, the curtailment of output had a serious effect on the trade in general. The tone of the market is generally satisfactory and prospects are for a strong demand during the remainder of the year.

Domestic trade is still one of the strongest features of the market. With the campaign to "buy now" progressing satisfactorily, dealers report a better demand from all sections. In most cases retailers have orders booked ahead for several weeks, and many cannot possibly be filled until August. Surplus stocks have been depleted and all efforts to accumulate stocks have failed. Available trucks and wagons are kept busy making deliveries. The private consumers who have been waiting for Pocahontas and other fancy grades are now satisfied to take Ohio-mined varieties. Retail prices are firm at the levels which have prevailed since the last change at the mines. Pocahontas is quite scarce. Considerable splint from certain fields of West Virginia is on the market. Jackson lump is not selling actively because of the higher Government prices.

The steam trade is active in all directions. Buying for future needs is now the ruling motive among the larger users. Some of the larger consumers have succeeded in laying in a surplus which is to guard against an emergency. The smaller users are trying to follow the example of the larger consumers. Railroads are taking a large tonnage, as their freight movement is increasing. Taking it all in all, the steam business is gaining in volume.

Lake trade is active, although the tonnage going to the Northwest is not so large as the program provides. This is caused mainly by the shortage in cars in the sections producing lake tonnage. The vessel movement is good, and in some instances boats have been compelled to go up the upper lake ports light in order to keep the ore trade moving. New dock prices recently announced are at lower levels than those prevailing earlier in the year. There is no congestion on the upper lake docks as the interior movement is brisk.

Production has been decreased in practically every section of the Buckeye State. This is especially true of eastern Ohio, Pomeroy and the Hocking Valley. It is estimated that the output in eastern Ohio is about 60 per cent. of normal and in the Hocking Valley and Pomeroy bend about 75 per cent.

CINCINNATI

Heavy demand from all quarters continues to run ahead of available supplies. The Lake movement is up to a large volume.

So far there is no indication of the slightest change in the volume of demand for coal, and unless the deliveries within the next month or so become so large as to take care of the winter's requirements for many consumers, this demand will apparently continue right into the winter season. The ability of dealers to secure and deliver coal to take care of orders on their books is of course limited by their receipts, and these have not been of such proportions as to speed up the storage demand very much. However, as far as domestic consumers are concerned, it is worth remembering that already there has been more coal placed in bins for next winter's consumption than is usually the case by September, and that this will be an important factor in next winter's demand from this class of consumers. It is the large industrial consumers that worry the trade most, as it is virtually impossible for them to store enough coal to make more than a slight reserve against their daily requirements. The business of getting much of the domestic demand out of the way will help materially in handling this problem next winter, however. The Lake movement through Cincinnati is now of considerable proportions, as it normally is during the entire summer season, and the usual large volume of coal from fields supplying this market is therefore going to the Lake ports.

LOUISVILLE

Domestic demand keen, with result that deliveries are so heavy that little surplus stock is being laid up by local yards. Steam demand steady and good. Shortage of eastern Kentucky coal, with improvement of western Kentucky deliveries.

Louisville jobbers and retailers are experiencing considerable trouble in securing eastern Kentucky coal, which is in considerable demand, as such grades are going to the coal byproducts plants and also being shipped to the Southern cotton mills, which are on the exempted list. Some little Hazard coal is coming in, but little of the more preferred Harlan, while Blue Gem is hardly known on the local market.

The situation in western Kentucky has eased up somewhat in the past ten days or two weeks, and the mines are securing a far better car supply, many foreign cars now coming in under the new regulations of the Railroad Administration. This has enabled the mine operators to hold labor, and as a fact they are now obtaining slightly better forces. The situation in that section is more hopeful, and production has shown an increase.

All western Kentucky coal moving into the Louisville district is being unloaded and delivered rapidly on stocking orders, little stock being accumulated on local yards, and retail yards generally near empty. However, with the stocking orders well in hand the retailers expect to accumulate some yard stocks shortly and be in position to take better care of steam inquiries.

Eastern Kentucky is still suffering from shortage of labor, although there is no kick coming just now on the car supply which is equal to all demands. However, labor is not to be had, and nearly all mines are working with small forces; on the other hand, new development concerns are going in so rapidly that it is a question as to where labor will come from for the greatly increased operations.

Due to the embargo against anthracite moving into Kentucky some 48-hour coke is now coming on the market and is meeting with ready demand. The St. Bernard Mining Co., which has large coke ovens at Earlington, Ky., is shipping coke into Louisville. This concern is also getting along nicely with a new power plant at Earlington, which will supply power to a number of mines.

BIRMINGHAM

Market conditions active. Sharp demand for domestic and steam grades continues. Improvement in production as a whole is slight. Much idleness of mine workers, and shortage of labor holds down production 20 to 25 per cent. below normal.

The scarcity of coal is still the dominant feature in the Alabama field, though much effort is being expended by mine owners to stimulate the output by appealing to the patriotism of the miners and other classes of labor around the operations, which is expected to bear some fruit in the way of a better production. There is no hope entertained of bettering the labor supply, hence the stimulation to greater effort on the part of the present organizations must be attempted as the only measure of relief.

Many industrial plants are suffering for an adequate supply of fuel—particularly brick manufacturers, some of which have large contracts for brick to be used in the construction of Government buildings and industrial plants being erected at the behest of the Federal authorities. Coal men point to the fact that there could be no more vital or important step taken by the Fuel Administration than the appointment of a committee on production. A representative in the field to look after this phase of the industry could be of untold assistance in increasing the production.

The storing of domestic coal is going on at a good rate, though receipts by dealers are not half the tonnage desired. Car-load lots are being ordered in increased numbers, the fuel committee issuing 144 permits during May. Figures compiled by the secretary of the commission show approximately 20,000 tons of domestic coal provided for in May.

It is understood that the fuel administrator is now engaged in compiling figures on cost of production of coal in Alabama with a view to formulating a new schedule of mine prices.

Coke

CONNELLSVILLE

No material change in coke production. Slight increase in byproduct coal production. Shortage in labor performance. Furnaces working fairly well.

Coke production in the region continues to hang around the average of 340,000 to 345,000 tons a week. Only in rare instances is car shortage now reported, but there is much said of labor shortage, particularly in the yards. Production of coal in the region, for shipment to byproduct plants, continues to increase somewhat, but on the whole there is inadequate labor performance. Representatives of the Fuel Administration are investigating matters and hope to induce the men to work more regularly.

The blast furnaces in operation have practically a full supply of coke, but few of them have been able to accumulate any surplus. A furnace here and there is out of blast through not being able to secure a regular supply. The Carnegie Steel Co. blew in an additional stack at the end of last week, now having 56 of its 59 furnaces in operation, a remarkably high proportion. Two are out for relining and one is too small to operate when labor is so scarce.

There has been practically no contracting for coke for the period beginning July 1, except for the renewal of a few furnace coke contracts that run on a monthly adjustment basis. Many foundries have been in the market for contracts, but operators prefer to sell from time to time rather than make contracts. The market remains quotable at the set limits: Furnace, $6; foundry, 72-hour selected, $7; crushed, over 1-in., $7.30, per net ton at ovens. Coke screenings from old dumps are bringing up to $6.50, according to the care exercised in preparation.

The "Courier" reports production in the Connellsville and Lower Connellsville region in the week ended June 8 at 341,020 tons, a decrease of 2000 tons.

Middle Western

GENERAL REVIEW

Labor shortage cuts down production. Car supply better than for months.

The shortage of labor continues to be a serious problem with all coal-producing companies in the Middle Western territory. The loss of men is felt more plainly in sections where the railroads have been able to provide a full car supply. Operators who have been making careful checks report that the miners as a class are not availing themselves of the opportunity to get more coal to the surface. Then, too, since the beginning of the war operators have been asking Government officials either to exempt or put the miners in a deferred class.

Production during the past week reached approximately 80 per cent., which seems to be about the limit, unless more miners are available.

H. K. Mack, formerly commercial agent for the Burlington R. R., Paducah, Ky., has been selected by the railroads entering Williamson and Franklin Counties as central car distributor, with headquarters at Herrin, Ill. It is understood that this central distributing office will have telephone connections with all the various yardmasters, and with all coal mines, thereby permitting the distributing office to know early each day the number of cars to be had for the next day's loading. Mr. Mack will also have full details as to what was done, how many cars left over, etc., at all mines under his jurisdiction. If this newly created office meets with the expectation, the same arrangement will be adopted in other large producing centers.

CHICAGO

Heavy buying continues. Large stocks desired before freight rate advance, June 25.

The fact that there becomes effective June 25 a substantial increase in the present freight rate on coal has caused some buying that might have been delayed to a later date. It is not uncommon, however, to hear sales managers say they have more orders on their books for size coal than they can fill for the next 60 or 90 days, unless they can get more coal out of their mines. This condition does not exist on fine coal, although quite a number report they are comfortably ahead with screening orders.

Quotations in the Chicago market are as follows, per net ton f. o. b. cars at mines:

	Williamson and Franklin	Saline and Harrisburg	Fulton and Peoria	Springfield	Carterville	Grundy, La-Salle, Bureau and Will.
Steam lump	$2.55@2.70	$2.55@2.70	$2.95@3.10	$2.55@2.70	$2.55@2.70	$3.25@3.40
Domestic lump	2.55@2.70	2.55@2.70	2.95@3.10	2.55@2.70	2.55@2.70	3.25@3.40
Egg or furnace	2.55@2.70	2.55@2.70	2.95@3.10	2.55@2.70	2.55@2.70	3.25@3.40
Small egg or nut	2.55@2.70	2.55@2.70	2.95@3.10	2.55@2.70	2.55@2.70	3.25@3.40
Stove	2.55@2.70	2.55@2.70	2.95@3.10	2.55@2.70	2.55@2.70	3.25@3.40
Chestnut	2.55@2.70	2.55@2.70	.....	2.55@2.70	2.55@2.70	3.25@3.40
Pea	2.55@2.70	2.55@2.70	.....	2.55@2.70	2.55@2.70	.....
Washed egg	2.75@2.90	.....	.....	2.75@2.90	2.75@2.90	3.45@3.60
Washed stove	2.75@2.90	.....	.....	2.75@2.90	2.75@2.90	3.45@3.60
Washed nut	2.75@2.90	.....	.....	2.75@2.90	2.75@2.90	3.45@3.60
Mine-run	2.35@2.50	2.35@2.50	2.75@2.90	2.35@2.50	2.35@2.50	3.00@3.15
Screenings	2.05@2.20	2.05@2.20	2.35@2.50	2.05@2.20	2.05@2.20	2.75@2.90
Washed slack	2.05@2.20	.....	.....	2.05@2.20	2.05@2.20	2.75@2.90

MILWAUKEE

Fuel administrator orders anthracite deliveries to begin, leaving prices to be adjusted later. Soft coal schedule fixed. A fair supply of hard coal thus far.

The coal situation at Milwaukee has loosened up to the extent that anthracite is now being delivered from all the docks which handle this grade of coal. Dockmen were holding their stocks until such time as the Government price schedule was announced, but retailers and consumers were so clamorous that State Fuel Administrator Fitzgerald directed that deliveries be made without further delay, leaving the matter of price open to Federal regulation. Because of the temporary check in output there is a goodly accumulation of anthracite to be distributed. From the opening of navigation up to and including June 17, 101,150 tons went over the docks here. In addition, some has come by rail. The sum total is somewhat more than was received last year during the same period.

The schedule of prices for anthracite will be fixed when the cost of handling coal over the docks has been determined. The inquiry as to this is still on. The margin between dock prices and the figures charged the consumer is put at $2.25 per ton with an extra charge of 50c. per ton when fuel is carried in to bins. This includes the retailer's overhead expense and also his loss due to shrinkage. Only six Milwaukee firms receive anthracite, but there is an army of middlemen.

Soft coal is moving out freely. Receipts are falling behind those of last year and it is thought there will be a shortage of steam coal when the season ends. Manufacturers are being urged to economize in every way possible. For the present dealers are allowed to charge as follows for soft coal, delivered: Pittsburgh, Youghiogheny and Hocking—Lump, $6.80; pile run, $6.55; screenings, $6.30. West Virginia Splint—Lump, $7.30; pile run, $7.05; screenings, $6.80. Kanawha Gas—Lump and egg, $8.05; pile run, $7.05; screenings, $6.80. An extra charge of 50c. per ton is made when fuel is carried in.

Coke is selling at $10.75 with the sanction of the fuel administration. This is somewhat higher than usual and presages a stiffening in hard coal prices in order to maintain a proper margin between the two grades of fuel. Thousands of tons of coke are being delivered by the local producers.

Dealers are adhering strictly to the rules laid down by the Federal Fuel Administrator. Users of anthracite are allowed only two-thirds of their normal supply, leaving the other third subject to circumstances later. Manufacturers are being refused anthracite, unless they have special permission, nor can anthracite be furnished to consumers who can use bituminous. Chestnut anthracite is being reserved for consumers having self-feeding magazine stoves. Dealers have orders to report sales at regular intervals.

KANSAS CITY

Plenty of slack going in storage. Dealers accepting orders only for mine-run. Some dealers allowing their stocks to dwindle.

A gratifying volume of slack is going into storage at Kansas City, industrial plant managers going as far as they can in providing against the expected shortage of next winter, and patriotically doing their part in helping the movement this summer. It is said that more than 100 cars of Arkansas semi-anthracite slack has been taken by industrial plants, and much even by office buildings. Many former users of Cherokee and other Kansas slack are storing the semi-anthracite. The latter has a freight rate of $1.60 and mine price of $2.75, against the 90c. freight rate and $2.80 mine price of Cherokee; but the Kansas softer coal will not store. The reduction in price of the Arkansas coal June 1, from $2.85, has had less effect on promoting the movement of Arkansas slack than has the coming advanced freight rate.

The demand for slack from Arkansas is exceedingly strong over a considerable part of the district, and consequently the production can be maintained at a high level. Previously to June, the mines were handicapped by inability to move slack in cars and by lack of equipment and labor to store the slack at the mines. Now that the slack is moving freely, the lump coal is also going rapidly over the district.

ST. LOUIS

An unusual condition, with practically a full car supply on all roads. Transportation improved and all coal easier. Railroad buying still light. Steam market gone to pieces, while domestic demand continues good. Country business improved. Labor shortage greatest handicap.

The St. Louis market enjoys at the present time practically a full car supply on all roads. Transportation has improved, and there is a better movement of loads and empties. In the Carterville field the mines are working steadily, but the labor shortage continues and the tonnages fall slightly week after week at most mines. There has been, during the past week, a heavier tonnage of this coal moving into the St. Louis market than for many weeks previous, but not near as much as the market could absorb. The railroads seem to be buying heavily in this field in preference to other fields. The same conditions prevail in the Duquoin district.

The Mt. Olive mines are working steadily, producing just about enough coal to take care of the demand, with an exceptionally good car supply and with less labor difficulty than in any other field. Throughout all the fields there has been an exceptionally hard time moving steam sizes of coal, and some mines have been idle on account of their inability to move screenings.

In the Standard field the conditions are unusually bad. There is an overproduction, and several mines are having a hard time working on account of the surplus of steam coal. The railroads are not buying the tonnage in this field that they were a year ago, or that they should be buying now. The car supply is full and transportation is much improved, but there is going to be a labor shortage here that is going to grow worse than in other fields, for the reason that the mines are not working steadily and the miners are going to other places where they can secure steady work.

Standard screenings got down to $1.25 and 2-in. lump to $2.15 during the past week, and many mines had a surplus tonnage left over with no place to ship it. In the face of these conditions the brick plants have been shut down because they have used the coal allotted to them for the present year. There is an unusual demand for brick, and there is an over-supply of coal.

The demand for coal from the country is fairly good. Especially now, in view of the fact that on the 25th freight rates increase 25 per cent.

The prevailing circular at St. Louis is, per net ton f.o.b. mines:

	Williamson and Franklin County	Mt. Olive and Staunton	Standard
6-in. lump	$2.55@2.90	$2.55@2.70	$2.40@2.70
3x6-in. egg	2.55@2.90	2.55@2.70	2.35@2.55
2x3-in. nut	2.55@2.90	2.55@2.70	2.35@2.55
No. 2 nut	2.55@2.90	2.55@2.70	.....
No. 3 nut	2.55@2.90	2.55@2.70	.....
No. 4 nut	2.55@2.90	2.55@2.70	.....
No. 5 nut	2.05@2.20	2.05@2.20	.....
2-in. scrgs	2.05@2.20	2.05@2.20	1.25@1.50
2-in. lump	.....	.....	2.25@2.40
3-in. lump	.....	.....	2.25@2.40
Steam egg	.....	.....	2.25@2.40
Mine run	2.35@2.50	2.35@2.50	1.85@2.00
Washed:			
No. 1	2.75@2.90	2.75@2.90	.....
No. 2	2.75@2.90	2.75@2.90	.....
No. 3	2.55@2.75	2.55@2.75	.....
No. 4	2.55@2.75	2.55@2.75	.....
No. 5	2.05@2.20	2.05@2.20	.....

Williamson & Franklin Co. rate is 87½c. Other fields, 72½c.

Ocean Shipping

OCEAN FREIGHTS

W. W. Battie & Co.'s Coal Trade Freight Report

June 17—The steamers available for Cuban and West Indian coal orders have decreased materially, a few having been sunk by submarines and a large number diverted to other trades, this causing an actual shortage, particularly of prompt boats. The Chartering Committee has named rates for Bermuda and Curacao, as noted below. To other destinations, little business is being completed, owing to the tonnage scarcity. Rates are as follows:

STEAM

	Tons Discharge
Havana, $6	1,000
West Indies, $7.50	600
Cardenas or Sagua, $9	300
Cienfuegos, $9	500
Port of Spain, Trinidad, $11	500
St. Lucia, $11	500
St. Thomas, $10	500
Barbados, $11	500
Kingston, $9.50 and p.c.	400
Santiago, $8.50	500
Santiago, 9.00	400
Guantanamo, $8.50	500
Guantanamo, 9.00	400
Bermuda, $9.50 and p.c., and discharged free	300

SAIL

Rio	$19.50 net	Montevideo	$19.50 net
Santos	19.50 net	Pernambuco	18.50 net
Buenos Aires	18.50 net	Bahia	18.50 net
La Plata	18.50 net	Para	15.50 net

Gross rates $1.50 per ton in excess of net rates.

On all above rates charterers pay vessels' towage to coal port.

To nitrate range about $16.50 gross prepaid.

The Chartering Committee's rate by steam is $18 net to the Plate and $19 net to Rio or Santos, but at the moment there are no steamers offered for this business.

General Statistics

BALTIMORE & OHIO

The following is statement of coal and coke tonnage moved over the Baltimore & Ohio system and affiliated lines during the month of March, 1918, as compared with the corresponding month of the previous year:

	1918 Tons	1917 Tons
Coal	3,644,103	2,990,163
Coke	272,725	318,194
Total	3,916,828	3,308,357